

MASSACHUSETTS
STATE COLLEGE

GOODELL LIBRARY

Per

~~F854~~

1839
V. 1

This book may be kept out

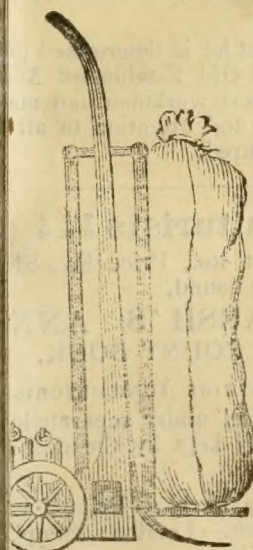
TWO WEEKS

only, and is subject to a fine of TWO
CENTS a day thereafter. It will be due
on the day indicated below.

CONTENTS.

	Page.		Page.
PLATE.....	91	veyors for Managing the Highways consi-	
Selection of Grain Seeds, Roots, &c...	ib.	dered	137
ug or Clay Draining	96	The Corn Laws.....	138
Cultivation of Turnips	99	Queries respecting Italian Rye-Grass	ib.
edish Turnips	101	Smithfield Market.....	139
eserving Turnips	102	To the Editor of the Sussex Advertiser.....	140
Corn Laws	103	A Case of Choking in the Horse.....	ib.
Lands near London	105	On the Breeding of Stock	141
eeding Sheep	106	The Tithe Commutation Act	142
an Agricultural Association.....	ib.	Lord Western's Merino Sheep	143
Drill System, &c.....	107	Food of Plants	ib.
English Agricultural Society and the Ve-		The Corn Laws.....	ib.
mary College	109	On Breeding and Feeding Stock	144
edfordshire Reporter, in reply to Sir Tho-		Letting Farms	ib.
Lethbridge's Letter on the Corn Laws ..	110	The Corn Laws.....	145
rmng Accounts	111	State of Foreign Corn.....	146
Right Hon. Lord Western	112	Stock of Lumber in the Port of Quebec	147
ay at Draycott, Staffordshire.....	ib.	The Smithfield Show	148
s of Horses.....	113	On the use of the Subsoil Plough.....	ib.
nt of the Expense of Stocking, of the		An Estimate of the Produce of the late Harvest	
al Disbursements, and of the Yearly Re-		as to Quantity and Quality, in Great Britain	
on a Farm of 250 Acres, in Ayrshire ..	ib.	and Ireland	ib.
ld Show	114	Monthly Report of Grain at Liverpool	153
uskisson on the Corn Laws	115	Tuxford's Patent Machine for Cleaning Wheat,	
ack-Water.....	117	Barley, Oats, &c.....	155
Essay, on the Black Caterpillar	119	Agricultural Reports	157
on the Turnip Fly	123	Agricultural Intelligence	163
Description of the Plate.....	134	Gardening Operations for February.....	164
onomical Feeding of Farm Horses &c...	ib.	Review of the Corn Trade during the month of	
Commutation.....	135	January	165
Editor of the Intelligencer	136	Prices of Seeds, Hops, Potatoes, &c.	169
ew Breeds of Sheep	ib.	Wool Markets	170
of the Society of Land Agents and Sur-			

ATHER, SCALE MAKER,
4, LOWER THAMES STREET, between
on Bridge and Billingsgate; and 62, HAY-
KET, St. James's, London.
INVENTOR AND PATENTEE.
e with common weights



A most important and valuable machine for all connected with agricultural pursuits. It is a well-known fact, both to buyer and seller of all kinds of grain, that, although it is the law and custom of the country to buy and sell by measure, yet both parties are studying what each kind of grain will weigh per bushel. The usefulness and readiness of this weighing machine must appear to all such, as its weighing apparatus is only laid on when you want to weigh any kind of goods; as a sack-truck or barrow, few can do without one; as it will answer so many purposes, either in the warehouse, at the farm, or in the field, for weighing corn, flour, seeds, hops, potatoes, cheese, hay, straw, coals, live or dead stock, or kind of goods whatever; also for inns, coach or on offices, wharfs, &c. It can be used either without the same weights at present in use; it can be as a steelyard with one weight; and it being light, portable, and a working tool (sack-truck or barrow), convince all that its utility surpasses all weighing machines ever before offered to the Public.

Price to weigh 2 cwt.	£3 10 0
Ditto 3 cwt.	4 0 0
Ditto 5 cwt.	6 0 0
With steelyard and ball, extra ..	£1 or 15 0

ROBINSON'S Patent Barley & Patent Groats,

RECOMMENDED BY THE FACULTY.
PATRONIZED BY THE QUEEN AND ROYAL FAMILY.

The attention of Mothers (especially during the period of nursing), Invalids, and Families, is particularly called to the above Patent Articles, being the purest Farinæ of the Oat and Barley ever produced, deprived of their fermentative properties by a steam process.

ROBINSON'S PATENT BARLEY
cannot be equalled by any article for making pure Barley water in a few minutes; all impurities being rejected, it is rendered more palatable than Barley Water made with Pearl Barley. It is an excellent adjunct with milk for the Breakfast table, highly useful for culinary purposes, light suppers, making delicious puddings, thickening soups; also, with the addition of lemon juice and sweetened, forms a most grateful beverage.

ROBINSON'S PATENT GROATS are universally esteemed for making a delicate Gruel; and both the Groats and Barley are a nutritious food for Children, and those suffering under difficult digestion.

CAUTION.—The Patentees, having received a Special Warrant of Appointment as Purveyors to Her Majesty, consider it a duty they owe themselves and the public, to put them on their guard against imitation, and respectfully to point out, that on each **GENUINE PACKET** are placed, in addition to the Royal Arms, the words "**BY ROYAL LETTERS PATENT,**" and the Signature of "**MATTS. ROBINSON.**"

Manufactured by **ROBINSON AND BELLVILLE**, 64, Red Lion Street, Holborn, London; and sold retail by all respectable Druggists, Grocers, Oilmen, &c., in town and country.

Country Dealers are requested to be particular in ordering "**ROBINSON'S PATENT.**"

ADVERTISING SHEET FOR THE FARMER'S MAGAZINE.

COURTNEY'S MEDICINES FOR ANIMALS.—Patrons:—The Right Hon. Lord Ashburton, Grange, Hants; the Right Hon. Lord Yarborough, Brocclesby, Linc., and Isle of Wight; the Hon. W. Gage, (President of the Hants Agricultural Society) Westbury House, Alton; Sir T. Baring, Bart.; Sir John Pollen, Bart., M. P., Redenham House, Sir J. Barker Mill, Bart., Mottisfont, Hants; Colonel Hawker, Longparish House; Colonel Iremonger, Wherwell House, and Colonel Wall, Worthy Park, Hants; W. Congreve, Esq., Aldermaston House, Berks; R. Etwall, Esq., M. P., Longstock Down, Hants; W. Taylor, Esq., Hockley; E. W. Blunt, Esq., Kempshot Park, &c.; and testified by thousands of Breeders of the Animal.

COURTNEY'S ASTRINGENT BALLS cure lambs, sheep, calves, foals, fawns, oxen, &c., in scour and looseness. Sold, fit to use, boxes at 5s., 40 doses for lambs, and 10 ditto, half-size 2s. 9d.

COURTNEY'S ANIMAL RESTORATIVE cures in and outward swellings of all kinds, prevents mortify, heave and straining of ewes, cows, mares at birth, &c.; is the finest embrocation extant for the stable and animal in bruises, hurts, strains of all sorts, sores, wounds, udders, stings, and strengthening blister, does not destroy the hair. In 2s. 9d., 5s., and 7s. 6d. bottles.

COURTNEY'S HAMPSHIRE FLY and VERMIN POWDERS stop flies striking sheep, ticks and lice, aids growth, keeps wool.—In packets 3s. 6d. each, to dress 300, &c.

COURTNEY'S INFALLIBLE MANGE AND VERMIN OINTMENT, for sheep and dogs, cures mange, kills lice and ticks. In pots 4s. &c.

COURTNEY'S WORM POWDERS for Horses, kill worms, and wonderfully improve condition. In packets of nine doses, 5s. 6d., &c.

COURTNEY'S THRUSH and FOOT-ROT POWDERS for horses and sheep. In packets, 2s. 6d. &c.

COURTNEY'S FRET and CHOLIC DRAUGHT cures horses within five minutes. In bottles, two draughts, 4s., &c.

Prepared only by the proprietor, Mr. W. COURTNEY, Newton Stacy, and Church Farm, Barton Stacey, near Sutton Scotney, Hants; and sold Wholesale and Retail by him, and all London and Country Patent Medicine Vendors in the United Kingdom.

Manure for Lent Corn, Pulse, Turnips, &c.

THE HUMUS and CARBON, prepared by Messrs. LANCE & Co., contain all the essential qualities of Bones, Gypsum, Potash, Soda, Animal and Vegetable Decays, &c., and may, with water, be converted into **LIQUID MANURES**.

These Manures have been prepared with success, since the early part of the year 1835, from sewer sediments and human soil. They are mixed in various proportions to suit the different mineral natures of agricultural soils, and to suit various crops.

A Chemical Account of the **MANURES** may be seen in "THE COMPLETE HOP FARMER," published by Messrs. Ridgway, Piccadilly; their effects and appropriation to the various soils, conjointly with a collection of earths, may be seen at the Polytechnic Institution, 209, Regent-street, attached to the English Agricultural Society's Rooms.

The Manures are sold in London by Mr. RED-GRAVE, 25, Albany-street, Regent's-park; and by Agents in various parts of the country.

The prices are, Carbonized Humus, 1s. 9d. per bushel; Animalized Carbon, 1s. 6d. do.; inferior Carbon, 10d. do. A Mixture with fine Bone Dust, 2s. do.

The Carbonaceous Powder with which the offensive matters are disinfected may also be had at 2s. per bushel.

A **HAND DRILL** for sowing Seeds and Manure, 80s.

TO LANDOWNERS, FARMERS, AND AGRICULTURISTS IN GENERAL.

W. J. PLENTY,

MACHINIST, PLOUGH, & AGRICULTURAL IMPLEMENT MANUFACTURER,

SMITH AND FOUNDER,

No. 83, WEST SMITHFIELD, LONDON.

W. J. PLENTY begs to recommend at this season of the year his latest Improved Chaff-cutting Machines, Oil-Cake Machines, and Turnip Slicers, at the prices as under, and to say that he can warrant them, as well as all other Implements and Machines manufactured by him, to be of the best materials and workmanship.

Improved Chaff-cutting Machine, with 3 Knives for Horse Power £13 13 0
Do. Do. 2 Knives 10 10 0
Do. Do. for a smaller consumption 7 7 0
Machines for breaking Rape and Linseed Cake, from £3 13 6 to 10 10 0
Turnip Cutters and Slicers 3 13 6 to 5 5 0
Plenty's Improved Patent Ploughs. 3 5 0 to 6 6 0
Scotch Iron Ploughs, and others of all descriptions.
Moulding up Ploughs & Horse Hoes 3 0 0 to 4 14 6
Findlayson's Patent Self Cleaning Harrow . 10 10 0
Scarifiers or Cultivators of all descriptions 4 10 0 to 14 14 0
Improved Lever Drills of various size 18 18 0 to 56 0 0
Drills for Turnips, Mangel Wurzel, &c. 2 10 0 to 7 7 0
Thrashing Machine, to work by hand 16 16 0
Do. to any power.. 35 0 0 to 140 0 0
Winnowing Machines, from 8 8 0 to 18 18 0
Bruising Machines, for all kinds of Grain, Malt, and Pulse 6 6 0 & upwards.
Mills of all sizes, for Grinding Wheat, Oats, Beans, Malt, Barley, and other purposes, together with all other Implements used by the Farmer, at the lowest possible prices, for Ready Money.

W. J. P. begs to say, that he is determined to maintain the reputation of his Old Established Manufactory by a selection of the best workmen and materials, and by a strict punctuality and attention to all orders with which he may be favoured.

To Agriculturists !!!

Just Published, Extra-Post 4to., Price Five Shillings, neatly bound,

HALL AND MARSH'S ANNUAL FARMER'S ACCOUNT BOOK.

By an Eminent BERKSHIRE AGRICULTURIST.

This Plan being arranged under separate heads, it can be easily and accurately kept by the most inexperienced Accountant.

Speenhamland, Newbury, Berks:—Printed and published by Hall and Marsh.—London: Simpkin and Marshall, Stationers' Hall Court.

DONNA MARIA SUPERB SEED

WHEAT for SPRING SOWING. Considering the enormous and increasing Consumption of Foreign Wheat, the above, of all others, demands immediate attention. One Twenty Shilling Packet is sufficient to STOCK a FARM.

OBSERVE.—Sold only at Mr. WEBBER'S, 81, Lombard-street, in sealed and signed Packets of 20s., 10s., and 5s. each, the latter intended for GARDENS ONLY.

NOTICE TO CORRESPONDENTS.

We offer our best thanks to many kind and valued Correspondents, who have favoured us with their communications ; but which we are, unavoidably, compelled to postpone until the publication of the next number.

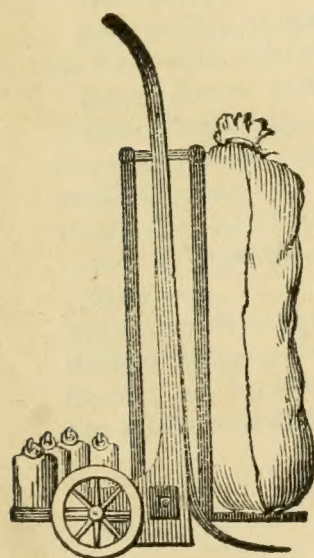
CONTENTS.

	Page.		Page.
THE PLATE—Lord Western's New Breed of Sheep	171	On the Effects of Draining.....	201
Description of a Machine for making Drain-Tiles	173	New, quick, and humane Method of Slaughtering Animals	202
On the Selection of Grain Seeds, Roots, &c... ..	175	The New Poor Laws	ib.
On the Rural Management of the Forfarshire part of the Western District of Strathmore ..	179	To the Landowners and Occupiers of the County of Essex	203
On the Nature and Properties of Lime	184	To the Editor of "The Morning Herald"	204
Colchester and adjoining Hundreds' Agricultural Association	187	Tithe on Hops.....	ib.
The Prince de Rohan Potato—a new Variety..	188	On Portable Manures.....	205
The Corn Trade	189	On the Culture of the Potato ..	206
On cutting Wheat before it is ripe.....	ib.	On the Law respecting Glandered Horses	211
The Corn Laws.....	190	On Draining	212
The Trotsworth Manure.....	192	Answer to Queries respecting Italian Rye-Grass ..	213
Commutation of Tithes on Fruit Plantations... ..	ib.	The Corn Laws.....	ib.
On Subsoil Ploughing	193	First Annual Report of the Harleston Farmers' Club.....	214
Plough Drainage.....	ib.	The Corn Separator.....	217
Corn Laws.....	194	Agricultural Colleges	ib.
The proposed Act for Encouraging the Cultivation of Continental Soils.....	195	To the Right Hon. Lord Melbourne, &c. &c. ..	219
The Corn Laws	196	Anti Corn Law Delegation	233
On Subsoil Ploughing.....	193	To the Right Hon. Lord John Russell	235
On Assessing Cottages to Poor Rates	199	Agricultural Reports	239
The Corn Laws.....	ib.	Agricultural Intelligence	242
The Corn Laws	200	Review of the Corn Trade during the month of February	245
Agriculture	201	Prices of Seeds, Hops, Potatoes, &c.	249
		Wool Markets	250

BATHER, SCALE MAKER,
4, LOWER THAMES STREET, between London Bridge and Billingsgate; and 62, HAY-MARKET, St. James's, London.

INVENTOR AND PATENTEE.

In use with common weights



A most important and valuable machine for all connected with agricultural pursuits. It is a well-known fact, both to buyer and seller of all kinds of grain, that, although it is the law and custom of the country to buy and sell by measure, yet both parties are studying what each kind of grain will weigh per bushel. The usefulness and readiness of this weighing machine must appear to all such, as its weighing apparatus is only laid on when you want to weigh any kind of goods; as a sack-truck or barrow, few can do without one; as it will answer so many purposes, either in the warehouse, at the farm, or in the field, for weighing corn, flour, seeds, hops, potatoes, butter, cheese, hay, straw, coals, live or dead stock, or any kind of goods whatever; also for inns, coach or waggon offices, wharfs, &c. It can be used either with or without the same weights at present in use; it can be used as a steelyard with one weight; and it being light, portable, and a working tool (sack-truck or barrow), must convince all that its utility surpasses all weighing machines ever before offered to the Public.

Price to weigh 2 cwt.	£3 10 0
Ditto 3 cwt.	4 0 0
Ditto 5 cwt.	6 0 0
With steelyard and ball, extra ..	£1 or 15 0

ROBINSON'S

Patent Barley & Patent Groats,

RECOMMENDED BY THE FACULTY.

PATRONIZED BY THE QUEEN AND ROYAL FAMILY.

The attention of Mothers (especially during the period of nursing), Invalids, and Families, is particularly called to the above Patent Articles, being the purest Farinae of the Oat and Barley ever produced, deprived of their fermentative properties by a steam process.

ROBINSON'S PATENT BARLEY
cannot be equalled by any article for making pure Barley water in a few minutes; all impurities being rejected, it is rendered more palatable than Barley Water made with Pearl Barley. It is an excellent adjunct with milk for the Breakfast table, highly useful for culinary purposes, light suppers, making delicious puddings, thickening soups; also, with the addition of lemon juice and sweetened, forms a most grateful beverage.

ROBINSON'S PATENT GROATS are universally esteemed for making a delicate Gruel; and both the Groats and Barley are a nutritious food for Children, and those suffering under difficult digestion.

CAUTION.—The Patentees, having received a Special Warrant of Appointment as Purveyors to Her Majesty, consider it a duty they owe themselves and the public, to put them on their guard against imitation, and respectfully to point out, that on each GENUINE PACKET are placed, in addition to the Royal Arms, the words "BY ROYAL LETTERS PATENT," and the Signature of "MATTS. ROBINSON."

Manufactured by ROBINSON AND BELLVILLE, 64, Red Lion Street, Holborn, London; and sold retail by all respectable Druggists, Grocers, Oilmen, &c., in town and country.

Country Dealers are requested to be particular in ordering "ROBINSON'S PATENT."

NOTICE TO CONTRIBUTORS

LIBRARY OF THE
MASSACHUSETTS
STATE COLLEGE

Per 1839
F2254, v.1

MASSACHUSETTS
STATE COLLEGE

MASSACHUSETTS
STATE COLLEGE

The following is a list of the books in the collection of the Massachusetts State College, which are now in the possession of the State of Massachusetts. The books are arranged in alphabetical order of the author's name. The list is given for the purpose of enabling the public to know the extent of the collection, and to be able to find the books which they may wish to consult. The books are all of the latest editions, and are of the highest quality. The collection is one of the most complete and valuable in the State, and it is hoped that it will be found useful to the public.

The following is a list of the books in the collection of the Massachusetts State College, which are now in the possession of the State of Massachusetts. The books are arranged in alphabetical order of the author's name. The list is given for the purpose of enabling the public to know the extent of the collection, and to be able to find the books which they may wish to consult. The books are all of the latest editions, and are of the highest quality. The collection is one of the most complete and valuable in the State, and it is hoped that it will be found useful to the public.

BEFFLE ASSEMBLY NEW MONTHLY THE CONTENTS.

	Page.		Page.
Mr. Handley's Drainage Bill	251	The Corn Laws	296
Epitome of a Bill for facilitating the Drainage of Lands in England and Wales	252	On estimating the value of Farms.....	298
Agriculture	255	Union Agricultural Society	ib.
To the Editor of the Farmers' Magazine	256	Cultivation of Gorse.....	300
The Corn Laws	258	Grain, Flour, and Meal	301
The obligation and extent of humanity to Brutes	260	Sheep in California.....	ib.
Description of a Machine for distributing Soot, and remarks on Soot as a top-dressing to Crops	262	On the Cultivation of Cabbages and Mangel Wurzel.....	302
On Breeding In-and In	264	On Factitious, or Mule-bred Animals.....	303
Woollen Manufacture in Siberia	265	A Hint to Landowners and Farmers.....	304
Don John.....	266	Average Prices of Wheat.....	305
System of Management on the Farm of Sway- thorpe	267	Hoeing Wheat.....	306
The English Agricultural Society.....	271	Answers to Queries on Italian Rye Grass.....	308
On breeding Stock.....	272	Hollow Draining	ib.
The English Agricultural Society and the Ve- terinary College.....	273	Agricultural Education	309
Answers to Queries on Italian Rye-Grass	ib.	Corn Laws.....	310
A Table containing the Average Annual and Decennial Prices of Wheat in England, from the year 1770 to 1838, both inclusive.....	274	The Consequences and Danger to the Labourers and Working Classes by throwing out of cul- tivation any large proportion of the United Kingdom	311
On the cheapest and most efficient mode of sur- face or Furrow draining.....	275	On the second known Fertilizer of the Soil, Ma- nure	312
Nitrate of Soda.—Query ?	276	Report of Tithe Commissioners	316
Report on Subsoil and Trench Ploughing.....	277	Llandovery District Agricultural Society	317
Stable Economy.....	281	The Bee Keeper's Manual.....	ib.
On the progress of Improvement in Agriculture	290	Spade Husbandry	318
Liverpool Agricultural Society's Ploughing Match.....	291	On Dibbling Wheat.....	320
Agricultural Meetings and Agitations	292	Agricultural Reports	321
Rutland Hedge-cutting and Ditching.....	294	Gardening Operations for April	323
Geology and Agriculture	295	Agricultural Intelligence	324
The Intelligence of Animals	ib.	Review of the Corn Trade during the month of March	325
		Prices of Seeds.....	329
		Wool Markets	330

THE
NEW MONTHLY
BELLE ASSEMBLÉE,

A FASHIONABLE AND LITERARY MAGAZINE,
UNDER THE IMMEDIATE PATRONAGE OF HER ROYAL HIGHNESS

The DUCHESS of KENT,

Published on the First of every Month,

WITH

HIGHLY FINISHED CUTS OF THE NEWEST COSTUMES,

PRICE ONE SHILLING,

CONTAINS

Two Coloured Plates of the Monthly Fashions.

FINISHED IN THE FIRST STYLE.

*The Work is Embellished with CUTS of the most FASHIONABLE DRESSES,
as they arrive Weekly from Paris.*

The Proprietors having commenced a New Series of the Monthly Belle Assemblée beg to offer their warmest acknowledgements to their Subscribers, and the Public in general, for the very liberal Patronage the work has received during a period of nearly Seven Years—a success the more gratifying from the fact of its embracing an era unprecedented for competition in the annals of the lighter branches of Periodical Literature. They deem it unnecessary, from the high auspices under which the work is published, (it being especially Patronized by the most August Mother in the Realm,) to direct attention to the moral tone pervading its contents, which renders the Belle Assemblée so desirable a Magazine to place in the hands of the young and virtuous female, while the continuation of the same talent which has hitherto been so efficiently manifested in its Editorial department, is the best security they can present to its readers for future Literary excellence.

The Number for January contained a beautiful Steel Engraving of Her Most Gracious Majesty the Queen; and that for July was embellished with a splendid Portrait of Her Royal Highness the Duchess of Kent.

OPINIONS OF THE PUBLIC PRESS.

- "This magazine should find its way into every drawing-room in the kingdom"—**NEWS.**
"The 'New Monthly Belle Assemblée' continues unrivalled in its claim to public notice, as the *arbiter elegantiarum* of the day."—**MAIDSTONE GAZETTE.**
"In truth, one of the best of the class we have ever met with."—**MAIDSTONE JOURNAL.**
"Here we have all that is calculated to interest our fair countrywomen."—**CARLISLE JOURNAL.**
"A very great acquisition to the fashionable world."—**READING MERCURY.**
"The literary contents surpass those of any similar publication."—**KENT HERALD.**
"The cheapest medium of fashionable intelligence that is accessible to our fair readers, to whom, as the best judges, we most cordially recommend it."—**GLOUCESTER JOURNAL.**
"Here we have all that is calculated to interest our fair countrywomen—the pencil of fashion, the pen of romance, and the still small voice of the warbling muse."—**CHELMSFORD CHRONICLE.**
"This elegant and amusing periodical promises to deserve well the patronage of the female sex."—**NEWCASTLE COURANT.**

All Communications to be addressed to 24, Norfolk-street, Strand, London (post paid).

CONTENTS.

	Page.		Page.
THE PLATE—Mr. Chamberlain's Ox.....	331	Mill-Stones	376
Lecture on the Marquis of Tweeddale's Brick and Drain Tile Machine	ib.	To the Editor of the Farmers' Magazine	377
On Herbaceous Green Crops	333	Preservation and Preparation of Manures	379
Farming improved	335	Centralized Police for the whole Kingdom	380
Exhibition of the Productions of Industry— Woollens	336	Urine as Manure.....	381
On the Culture of Potatoes.....	337	The Corn Laws	382
Leicestershire Agricultural Society	338	Rutland Agricultural Society	383
Kent Agricultural College.....	342	Fifeshire Agricultural Society's Meeting	ib.
On the Selection of Seeds, Roots, &c.	347	The Nature of Soils	384
Ploughs and Ploughing Matches	351	Bees, Spring Feeding	ib.
On the Selection of Male Animals in the Breed- ing of Cattle and Sheep	352	Abortion or Slinking Calf	385
The Corn Laws—Questions put by the Anti- Corn Law Delegation answered	355	On the Application of Lime	386
The Corn Laws	357	Banking.....	ib.
A few Thoughts on Agriculture	ib.	On Bone Manure	393
Economy in Labour, and Improvement of Sys- tem	358	Sagacity of the Dog	394
Importation of Foreign Agricultural Produce..	359	The Veterinary Science and Agriculture	395
The fate of Racing Horses	ib.	On the Nature and Management of Live Stock	ib.
On the Cultivation of Potatoes.....	360	A Glossary of Geological Terms	396
On the Employment of Gas-Water as a Manure	362	The Globe Mangel Wurzel	397
The Pitcher Plant.....	ib.	On making Compost Heaps	398
Liquid Manure	ib.	Canada—The Corn Laws.....	ib.
Agricultural Chemistry.....	363	Figure and Points of a perfect new Leicester Sheep	399
The Corn Laws.....	368	Experiment on Soda as a Manure.....	ib.
On Subsoil-Ploughing Dry Land	370	Case of Interest to Farmers	ib.
An Essay on the simplest and easiest Mode of Analysing Soils	371	Agricultural Reports	400
On Draining and Subsoil-Ploughing	376	Agricultural Intelligence, Fairs, &c.	403
		Gardening Operations for May	404
		Review of the Corn Trade during the month of April	405
		Seed, Hop, Wool, and Potato Markets	410

BRITANNIA LIFE ASSURANCE COMPANY, No. 1, PRINCES STREET, BANK, LONDON. CAPITAL, ONE MILLION.

DIRECTORS.

WILLIAM BARDGETT, Esq.	ERASMUS ROBERT FOSTER, Esq.
SAMUEL BEVINGTON, Esq.	
WM. FECHNEY BLACK, Esq.	ALEX. ROBERT IRVINE, Esq.
JOHN BRIGHTMAN, Esq.	
GEORGE COHEN, Esq.	PETER MORRISON, Esq.
MILLIS COVENTRY, Esq.	WM. SHAND, Jun., Esq.
JOHN DREWETT, Esq.	HENRY LEWIS SMALE, Esq.
ROBERT EGLINTON, Esq.	THOMAS TEED, Esq.

MEDICAL OFFICERS.

WM. STROUD, M.D.	EBENEZER SMITH, Esq., Surgeon.
------------------	--------------------------------

SOLICITOR.

WILLIAM BEVAN, Esq. Old Jewry.

ADVANTAGES OF THIS INSTITUTION.

A most economical set of Tables—computed expressly for the use of this Institution, from authentic and complete data, and presenting the lowest rates of assurance that can be offered without compromising the safety of the Institution.

Increasing Rates of Premium on a new and remarkable plan, for securing loans on debts; a less immediate

payment being required on a Policy for the whole term of life than in any other Office.

Premiums may be paid either Annually, Half-yearly, or Quarterly, in one sum, or in a limited number of payments.

A Board of Directors in attendance daily at Two o'Clock.

Age of the assured in every case admitted in the Policy.

All claims payable within one month after proof of death.

Medical Attendants remunerated, in all cases, for their reports.

A liberal Commission allowed to Solicitors and Agents.

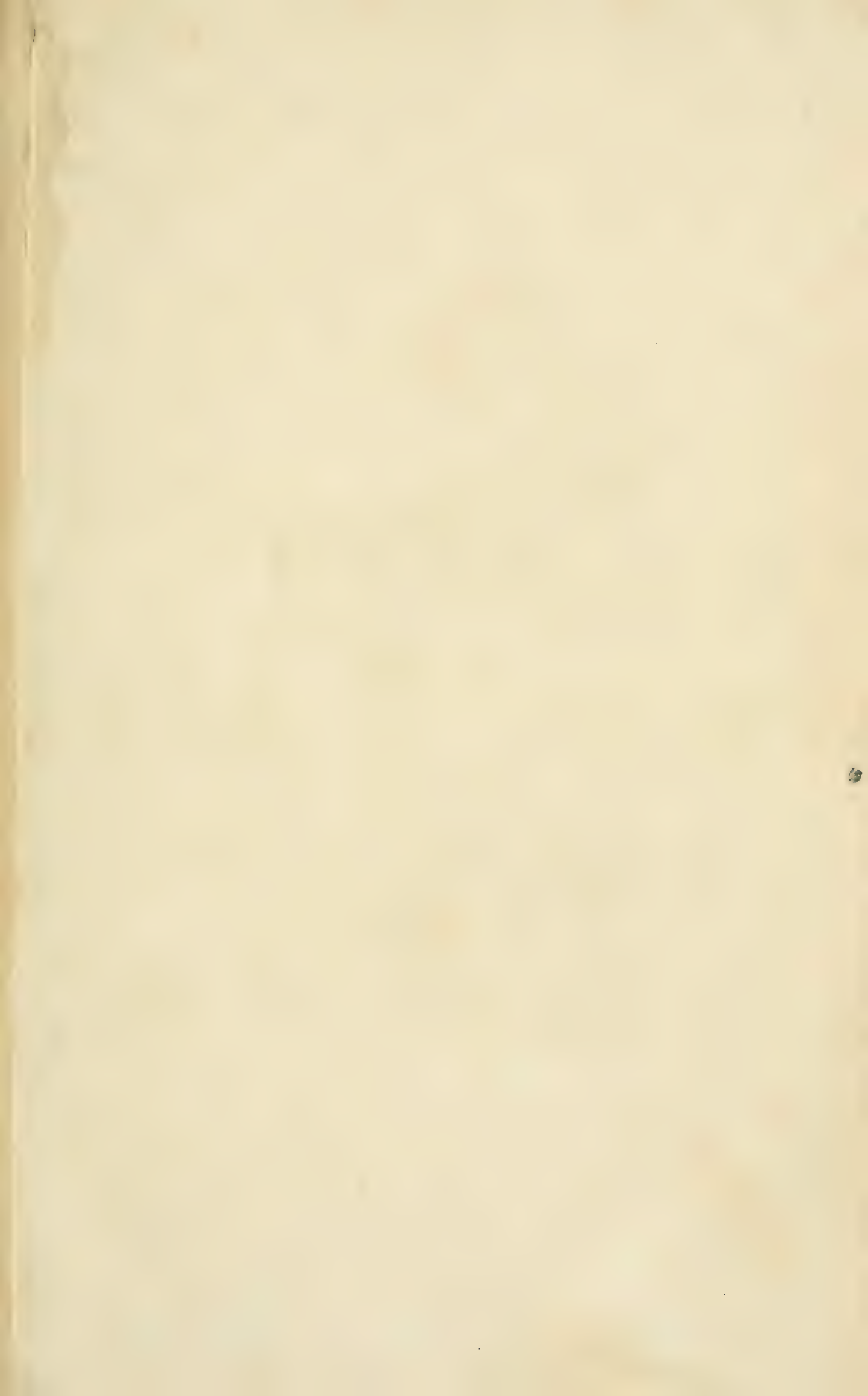
Premium per Cent. per Annum payable during					
Age.	First Five years	Second Five years	Third Five years	Fourth Five years	Remainder of life.
20	£. s. d. 1 1 0	£. s. d. 1 5 10	£. s. d. 1 10 11	£. s. d. 1 16 9	£. s. d. 2 3 8
30	1 6 4	1 12 2	1 19 1	2 7 4	2 17 6
40	1 16 1	2 4 4	2 14 6	3 7 3	4 3 4
50	2 16 7	3 9 4	4 5 5	5 6 3	6 13 7

PETER MORRISON,
Resident Director.

CONTENTS.

	Page.		Page.
THE PLATE—Mr. Baker's short-horn Bull	411	On the Foot-Rot in Sheep	445
List of Prizes obtained for Animals exhibited by R. W. Baker, Esq.	ib.	To the Members of the Stockbridge Cattle Show	446
On Culmiferous Crops	413	Important Chemical Discovery	447
On the proper Manure for Turnips	417	Situation of an Apiary and Bee Pasturage	ib.
Important Discovery	ib.	On the Cultivation of Timber Trees	448
A Review of the Prices of Corn in Prussia....	418	Comparative Phrenology—Birds	449
Caoutchouc Horse-shoes	425	The Prize Essay of the Entomological Society on the Turnip Fly and our "Reviewer" ...	450
An Account of a Comparative Trial of Stable- Manure and Bone-Dust for raising Turnips on a Clay Soil	ib.	A few Thoughts on Agriculture—Draining....	451
On the Cross Breed of Sheep between the Cots- wold and the Southdown	426	The Apple ..	452
The Goodwood Cup	427	Carrots	ib.
Liquid Manure	ib.	A Case of a Horse swallowing Sponge	453
On Crib-Biting	428	Infant Schools of Horticulture and Agriculture in France	ib.
Labourers' Friend Society	430	A just and generous Landlord	ib.
Patent Rotatory Steam-Engine	ib.	An Experimental Inquiry into the Influence of Nitrogen on the Growth of Plants	454
Agricultural Uses of Bone	431	On the Evolution of Nitrogen during the Growth of Plants, and the Sources from whence they derive that Element	458
Remarkable Anecdote of a Dog	ib.	An Account of an Experiment on the relative Values of several Varieties of Wheat	460
Museum of Economic Geology	432	Spade Husbandry	463
Grand Cairo—Hatching of Chickens	ib.	On Breeding Sheep	ib.
Russian Farmers	433	The Linden Tree	ib.
Character of the English Peasantry	ib.	Turnip Culture	464
The Potato	434	Profits of Manufacturers	465
Account of Experiments made with some of the rarer Grasses as a substitute for Tares, or the failure of After-math	436	English Agricultural Society	466
Faringdon	437	A Table for the Use of the Cattle-Keeper	470
On the Comparative Value of the Turnip and Potato Crops	438	Important Sale of Short-horns, Sheep and Horses	471
Growth of Swedish Turnips	ib.	The Cotswold and Down Cross	472
To the Wool-Growers and Graziers of the County of Essex	439	The Vegetable Cultivator	473
Labourers' Friend Society	ib.	Turnip Seed	ib.
Employment of Mineral Tar, or Pyroligneous Liquor, for the Protection of Walls of Ma- sonry or of Mud	ib.	The Smithfield Club	474
The Properties and Use of Soil and Subsoil ...	440	Improvement of the Condition of the Labouring Classes in Ireland	475
The Productive Powers of Nature	ib.	Foot-Rot in Sheep	476
Bees swarming	441	The Woollen Trade	477
London Lactaries	442	Agricultural Reports	478
Trotsworth Manure	ib.	Agricultural Intelligence, Fairs, &c.	483
On the Unprofitableness of Old Pasture com- pared with New	443	Gardening Operations for June	484
		Review of the Corn Trade during the month of May	485
		Seed, Hop, Wool, and Potato Markets	489







THE FARMER'S MAGAZINE.

VOLUME THE SECOND.

(NEW SERIES.)

JANUARY TO JUNE, MDCCCXXXIX.

LONDON:

OFFICE, 24, NORFOLK STREET, STRAND.

MAY BE HAD BY ORDER THROUGH ALL BOOKSELLERS.

Per
F2254

LONDON:
PRINTED BY JOSEPH ROGERSON,
24, NORFOLK-STREET, STRAND.

INDEX TO THE SECOND VOLUME.

(NEW SERIES.)

- Abortion, or slinking calf, 385
 Act, the proposed, for encouraging the cultivation of continental soils that our own may return to their primitive downs, 195
 Account of experiments made with some of the raw grasses as a substitute for tares, or the failure of after-math, 436
 Agricultural chemistry, 4, 363
 Agricultural college, 163, 217
 Agricultural college—Kent, 342
 Agricultural education, 309
 Agricultural intelligence, fairs, &c., 84, 164, 244, 324, 403, 483
 Agricultural meetings,
 Market hill, 51
 Rutland, 383
 Agricultural meetings and agitations, 292
 Agricultural museums, 261
 Agricultural queries, 243
 Agricultural reports, 80, 157, 240, 321, 400, 478
 Agricultural societies,
 Bath and West of England, 77
 Leicestershire, 338
 Rutland, 21
 Agriculture, a few thoughts on, 357, 451
 Agriculture, on the progress and improvement in, 290
 Ancient wages and prices in Suffolk, 36
 Anecdote of a dog, 431
 Answer to W. W.'s queries on the comparative merits of sheep, 2
 Answer to queries respecting Italian rye-grass, 213, 273, 308
 Anti-corn law delegation, 233
 Apple, the, 452
 Arable and turf farming compared, 14
 Assessing cottages to the poor-rates, 199
 Averages, imperial weekly, 89, 169, 249, 329, 409, 489
 Banking—Bank of England—account of the issues, securities, bullion, and surplus or rest, 387
 Banks, American, 391
 Bath and West of England Society for the encouragement of agriculture, &c., 77
 Bee-keeper's manual, 317
 Bees, spring feeding, 384
 Bees swarming, 441
 Birmingham annual review of the corn trade, 241
 Black caterpillar, prize essay on the, 119
 Black-water, on, 117
 Bone, agricultural uses of, 431
 Bone manure, on, 393
 Breeding in-and-in, 264
 Breeding of stock, 141, 272
 Breeding sheep, on, 463
 Cabbages and mangel wurzel, on the cultivation of, 302
 Canada,—the corn laws, 398
 Caoutchouc horse shoes, 425
 Carrots, 452
 Case of interest to farmers, 399
 Case of a horse swallowing sponge, 453
 Centralized police for the whole kingdom, 380
 Character of the English peasantry, 433
 Choking in the horse, a case of, 140
 Christmas of old, 47
 Colchester and adjoining hundreds' agricultural association, 187
 Comparative phrenology,—birds, 449
 Comparative value of the turnip and potato crops, 438
 Commutation of tithes on fruit plantations, 192
 Compost heaps, on making, 398
 Consequences and danger to the labourers and working classes by throwing out of cultivation any large proportion of the United Kingdom, 311
 Corn laws, the, 3, 15, 138, 143, 145, 190, 194, 196, 199, 213, 258, 206, 310, 357, 368, 382
 Corn laws, on the, 84, 103
 Corn laws, speech of E. Cayley, Esq., 10
 Corn laws, Mr. Huskisson on the, 115
 Corn separator, 217
 Corn trade, review of the, 85, 165, 245, 325, 405, 485
 Corn trade, the, 189
 Cotswold and Down cross, 472
 Crib-biting, on, 428
 Crops, the, 482
 Cross breed of sheep between the Cotswold and the South-down, on the, 426
 Culmiferous crops, on, 413
 Cultivation of gorse, 300
 Cultivation of potatoes, 360
 Cultivation of timber trees, 448
 Culture of the potato, on the, 206
 Cutting wheat before it is ripe, 189
 Description of a Devon ox, the property of C. Hillyard, Esq.—plate, 1
 Description of a short-horn ox, bred by Sir C. Knightley, Bart.,—plate, 91
 Description of a machine for making drain tiles, 173
 Description of a machine for distributing soot, and remarks on soot as a top-dressing to crops, 262
 Devon agricultural society, to the members of the, 41
 Dibbling machine, 297
 Dibbling wheat, on, 320
 Don John, winner of the Doncaster St. Leger, 1838, 266
 Drainage bill, Mr. Handley's, 251
 Draining land, remarks on, with a description of the mole-plough brought from England by his grace the Duke of Hamilton, 48
 Draining, on the effects of, 201
 Draining, on, 212
 Draining and subsoil ploughing, on, 376
 Drill system, on the, 107
 East Lothian stubble rake, 17
 Economy in labour and improvement of system, 358
 English agricultural society, 271, 297, 466
 English agricultural society, the first general meeting, 65
 English agricultural society, prizes

- to be awarded at the meeting at Oxford, 68
 English agricultural society, list of subscribers, 70
 English agricultural society and the veterinary college, 38, 109, 273
 Essay on the turnip-fly, 123
 Essay on the simplest and easiest mode of analysing soils, 371
 Estimate of the produce of the late harvest in Great Britain, and Ireland, 148
 Evolution of nitrogen during the growth of plants, and the sources from whence they derive that element, on the, 458
 Experimental farm, on an, 26
 Experiment on soda as a manure, 399
 Experiment on the relative values of several varieties of wheat, 460
 Factitious, or mule-bred animals, 303
 Farm horses, on economical feeding of, 134
 Farmer's clubs, 294
 Farmer's Magazine, letter to the editor of the, 256, 377
 Farming accounts, on, 111
 Farms, on estimating the value of, 298
 Faringdon, 437
 Fate of racing horses, 359
 Fifehire agricultural society's meeting, 383
 Figure and points of a perfect new Leicester sheep, 399
 Food of plants, 143
 Foot-rot in sheep, on the, 445, 476
 Foreign corn, state of, 146
 Gardening operations for January, 83; for February, 164; for April, 323; for May, 404; for June, 484
 Gas-water as a manure, on the employment of, 362
 Geological terms, a glossary of, 396
 Geology and agriculture, 295
 Globe mangel wurzel, 397
 Glossary of geological terms, 396
 Goodwood Cup, the, 427
 Gorse, cultivation of, 300
 Grain, comparative prices of, 89, 169, 249, 329, 409, 489
 Grain seeds, roots, &c., on the selection of, 91, 175, 347
 Grain, flour, and meal, return to an order of the House of Commons, 301
 Grand Cairo—hatching of chickens, 432
 Grass land, on the improvement of, 50
 Grass lands near London, 105
 Growth of Swedish turnips, 438
 Haddington show of seed corn, &c., 307
 Harkaway,—plate, 16
 Harleston farmer's club, first annual report of the, 214
 Harvest, the late, 28
 Hedge cutting, 265
 Herbaceous green crops, 333
 Hereford ox, bred and fed by H. Chamberlain, Esq.—plate, 332
 Hint to landholders and farmers, 304
 Hoeing wheat, 306
 Holkham annual cattle sale, 85
 Hollow draining, 308
 Hops, particular districts from 1818, to 1838, 79
 Hops, prices of, 90, 169, 249, 410, 489
 Horses, diseases of, 113
 Horses, glandered, on the law respecting, 211
 Important invention, 83
 Important discovery, 417
 Important chemical discovery, 447
 Important sale of short-horns, sheep, and horses, at Dodding-ton, Northumberland, 471
 Importation of foreign agricultural produce, 359
 Improvement of the condition of the labouring class in Ireland, 475
 Infant schools of horticulture and agriculture in France, 453
 Influence of nitrogen on the growth of plants, an experimental inquiry into the, 454
 Italian rye-grass, answer to queries respecting, 213
 Intelligence of animals, 295
 Interesting to agriculturists, 26
 Invitation to landlords, 49
 Kent agricultural college, 342
 Labourers' Friend Society, 430, 439
 Lapach tree, the, 482
 Lecture on the Marquis of Tweed-dale's brick and drain-tile machine, 331.
 Leicestershire Agricultural Society, 338.
 Lethbridge, Sir T., and the corn-laws, 42.
 Letter to the Editor, by "An old practical farmer," 43
 Letter from Lord Western to Earl Spencer, 44
 Letter to the right hon. Lord Western, 112.
 Letter to the Editor of the Intelligencer, 136
 Letter to the Editor of the Sussex Advertiser, 140
 Letter to the landowners and occupiers of the county of Essex, 203
 Letter to the right hon. Lord J. Russell, 235
 Letting farms, 144
 Lime, on the nature and properties of, 184
 Lime, on the application of, 386
 Linden tree, the, 463
 Liquid manure, 362, 427
 List of prizes obtained for animals bred and exhibited by R. W. Baker, Esq., 411
 Live stock, on the nature and management of, 395
 Liverpool monthly review of the corn trade, 153
 Liverpool Agricultural Society's ploughing match, 291
 Llandovery district agricultural society, 317
 London lactaries, 442
 Machine for making drain-tiles, description of, 173
 Malt, the quantity of, consumed by the brewers of London and its vicinity, 79
 Man and swine, 83
 Mangel wurzel potato, 137
 Manure, on the second known fertilizer of the soil, 312
 Manures, preservation and preparation of, 379
 Mill-stones, 376
 Morning Herald, a letter to the Editor of the, 204
 M'Queen's letter to the right hon. Lord Melbourne, 219
 Museum of economic geology, 432.
 Napoleon, history of, 398
 Natural history of the turnip-flea beetle, on the, 29
 Nature and management of live stock, on the, 395
 New, quick, and humane method of slaughtering animals, 202
 New poor laws, the, 292
 Nitrate of soda, query, 276
 Notes, additional, to an article entitled "Hints and suggestions," 239
 Oaks, celebrated, 319
 Obligation and extent of humanity to brutes, principally considered in reference to domesticated animals, 260
 Patent rotatory steam engine, 430
 Perennial grasses, on, 43
 Pitcher plant, the, 362
 Plan of the society of land-agents and surveyors for managing the highways considered, 137
 Plug or clay draining, 96
 Plough drainage, 193
 Ploughing matches, 36
 Ploughing match, near Murthly Castle, 4
 Ploughs and ploughing matches, 351
 Portable manures, on, 205
 Potato market, 90, 169, 250, 410, 490
 Potato, the, 434
 Potato, on the culture of the, 206, 337, 360
 Potatoes, how to preserve, 47
 Preservation and preparation of manures, 379
 Preserving turnips, 102

- Prices of corn in Russia, a review of the, 418
 Prince de Rohan potato, a new variety, 188
 Prize essay on the black caterpillar, 119
 Prize essay of the Entomological Society on the turnip-fly and our "reviewer," 450
 Probable future price of wheat, on the, 39
 Productive powers of nature, 440
 Profits of manufactures, 465
 Prolific cow, 311
 Properties and use of soil and subsoil, 440
 Queries respecting Italian ryegrass, 138
 Questions put by the anti-corn-law delegation, answered, 355
 Rent-day at Draycott, Staffordshire, 112
 Reply to Sir T. Lethbridge's letter on the corn laws, by "The Bedfordshire Reporter," 110
 Report of the proceedings of the Yoxford farmers' club, 19
 Report on subsoil and trench ploughing, 277
 Report of the commissioners, 316
 Review of the corn trade, 85, 165, 245, 325, 405, 485
 Review of the prices of corn in Russia, 418
 Roderick Random, a short-horn bull, bred by R. W. Baker, Esq.—*plate*, 411
 Rural management of the Forfarshire part of the western district of Strathmore, on the, 179
 Russian farmers, 433
 Rutland agricultural society, 21, 383
 Rutland hedge cutting and ditching, 294
 Sagacity of the dog, 394
 Salt for manure, proposed manufacture of, 37
 Seed market, 89, 169, 249, 329, 410, 489
 Selection of male animals in the breeding of cattle and sheep, on the, 352
 Sheep, new breeds of, 51, 136
 Sheep, on breeding, 106
 Sheep, Lord Western's, 139, 143
 Sheep in California, 301
 Situation of an apiary and bee pasturage, 447
 Smithfield club, 474
 Smithfield market, 139
 Smithfield show, the late, 1, 148
 Smithfield club great dinner, 73
 Smithfield club, prize cattle, 77
 Smithfield show, account of the dead weights of the animals exhibited, 114
 Soda as a manure, experiment on, 399
 Soils, the nature of, 384
 Spade husbandry, 318, 463
 Stable economy, 281
 Stable manure and bone-dust for raising turnips on a clay soil, an account of a comparative trial of, 425
 Statement of the expence of stocking, of the annual disbursements, and of the yearly returns, on a farm of 250 acres in Ayrshire, 113
 Stock, on breeding and feeding, 144
 Stock of lumber in the port of Quebec, 11th December, 1838, 147
 Stockbridge cattle show, to the members of the, 446
 Subsoil ploughing, on, 193, 198
 Subsoil ploughing dry land, 370
 Subsoil plough, on the use of the, 148
 Surface or furrow draining, on the cheapest and most efficient mode of, 275
 Swedish turnips, 101
 System of management on the farm of Swaythorpe, 267
 Table for the use of the cattle-keeper, 470
 Tables containing the average annual and decennial prices of wheat in England, from the year 1770 to 1838, 274
 Tithe commutation, 135, 142
 Tithe commission, 135
 Tithe on hops, 204
 Tubsworth liquid manure, on the, 2, 192, 442
 Turnip culture, 464
 Turnip seed, 473
 Turnip-fly, essay on the, 123
 Turnips, on the cultivation of, 99
 Turnips, on the proper manure for, 417
 Tuxford's patent machine for cleansing wheat, barley, oats, &c., 155
 Union agricultural society, 298
 United States flour trade, 40
 Unproductiveness of old pasture compared with new, 443
 Urine as manure, 381
 Vegetable cultivator, 473
 Veterinary College, and the English agricultural society, 38, 109, 273
 Waltham agricultural association, 106
 Western's, Lord, three wether sheep—*Plate*, 171
 Wheat, average prices of, 305
 Wheat, the new varieties of, 83
 Wool growers and graziers of the county of Essex, to the, 439
 Wool markets, 90, 170, 249, 330, 410, 490
 Woollen manufacture in Siberia, 265
 Woollen trade, 477
 Woollens—exhibition of the productions of industry, 336
 Zinc milk-pails, 432

THE FARMER'S MAGAZINE.

JANUARY, 1839.

No. 1.—VOL. II.]

[NEW SERIES.

THE PLATE.

The subject of our first Plate is a Devon Ox, bred by the late George Talbot, Esq., of Guiting Hall, near Moreton on the Marsh, Gloucestershire, and fed by and the property of Clarke Hillyard, Esq., of Thorpelds, near Northampton, President of the Northamptonshire Farming and Grazing Society, and Author of a clever work on Agriculture, entitled "Practical Farming and Grazing." This animal was exhibited at the late Smithfield Show, and obtained a prize of fifteen sovereigns in Class 3. The silver medal was adjudged to the executors of the late Mr. Talbot, as the breeder; and the gold medal to Mr. Hillyard, for having exhibited the "best beast in any class." We are informed that this Ox, having been sold at the sale of the late Mr. Talbot's stock, passed through two or more fairs without attracting attention, and was standing unsold in Northampton fair late in the day, when Mr. Hillyard chanced to notice it; and, duly estimating its merits, made the purchase, and at once determined to exhibit it at the next Smithfield Show.

THE LATE SMITHFIELD SHOW.

As regards the cattle generally, it may be observed, that upon this occasion, the Herefords have outnumbered the Short-Horns in obtaining prizes, the reverse having been the case in many preceding shows. Of seven prizes for oxen, five have been carried off by the Herefords, one by a short-horn, Earl Spencer's, and one by a Devon, exhibited by Mr. Hillyard. The members of the Club, will doubtless remember the ox which Mr. Hillyard sent to the yard last year, and which he described as possessing all the points which a good ox ought *not* to possess, Mr. Hillyard at the same time stated that he had a little animal in reserve for the present exhibition, which would show them what an ox ought to be. He has redeemed his pledge, and the breeders of Devon stock are indebted to him. This Devon is pronounced to be "the best beast" in the yard, and has won the gold medal. The estimated weight of this ox is 144 stone of 8lb., and has we understand been sold for fifty pounds. The sheep of Lord Western's new breed attracted much attention.* There were

two pens, the one the produce of a Leicester ram and a Merino Ewe, the other the produce of a Merino ram and a half-bred Ewe, Merino and Leicester.

The first cross is manifestly the best, the further infusion of Merino blood, evidently showing a retrogression to the original Merino character. These sheep will apparently cut as good legs of mutton as any Southdown or Leicester. The wool is very fine: the fleeces of the first cross weigh about two pounds per fleece more than the pure Merino, and fetch as high a price. The sheep exhibited have, we are told, been kept upon cold clay land.

A number of agricultural implements were exhibited by Messrs. Plenty, Read, Gardner, Binchfield, Novington, Wyatt, Hunt, and Wedlake, but we did not observe any of a particularly new or superior character, with the exception of Gardner's turnip cutter, which is one of the best, if not the very best instrument for that purpose: indeed, the loft in which the agricultural implements and machines are placed for exhibition is so miserably dark and confined, as to render it impossible to examine them or scarcely see what they are. The increased number of animals exhibited, and the additional interest taken in the show, is such as to

* See Lord Western's Letter to Earl Spencer, page 44.

render a more extensive accommodation indispensable. The committee appointed last year to seek for larger premises has made a report, and we doubt not, that before the next show more convenient premises will be obtained.

The exhibition of seeds and roots by Messrs. T. Gibbs and Co., of Half-Moon-street, Piccadilly, was very superior. They had some exceedingly fine specimens of mangel wurzel, Swedish and other turnips, Kohl Rabi, a large collection of specimens of the most approved grasses for laying down land to permanent grass, and a sample of a new blue pea, called the Whitmore Blue Pea, which is only adapted for poor light land. The selection of seeds of all kinds is of the highest importance to the farmer, and too much encouragement cannot be given to those persons engaged in the seed trade, upon whose correctness in that branch implicit confidence can be placed, an observation which will strictly apply to the house above named. Although not forming part of the exhibition in Sadler's yard, yet being prepared for the examination of those agriculturists who visit London, we cannot omit noticing the collection of roots now exhibiting by Messrs. Cormack, Son, and Oliver, at their Bedford Conservatory, Covent Garden, and at the same time expressing our conviction, that agriculturists would be much gratified by an inspection of the particularly fine specimens of turnips, globe mangel wurzel, &c., and the permanent pasture grasses in their natural growing state.—*Mark Lane Express*.

ON THE TROTSWORTH LIQUID MANURE.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—Observing an advertisement in your last number, announcing the intention of Mr. Kimberley to publish his long looked for pamphlet containing a description of the Trotsworth liquid manure, I beg to offer a few remarks on that subject that may not be uninteresting to your agricultural readers, who like myself are anxious to obtain a knowledge of the ingredient, with a view to apply it to our own benefit.

In consequence of the very high opinion entertained of the value of this manure, (as described in *Bell's Weekly Messenger*, Dec. 25, 1837) by many of the first practical farmers in the county, numerous applications were made to Mr. Kimberley by persons who had an opportunity of witnessing the flourishing state of his crops for some years past, to know how they were to obtain a supply of the mixture, at the same time offering to subscribe any reasonable sum for that purpose; but, as the manure could not be conveyed in a manufactured state to any distance without considerable expense of carriage, &c., and as the inventor of the composition was not desirous of maintaining a monopoly of the article in question, it was suggested that a public subscription at a remunerating price should be offered for the purchase of the recipe; but the proposition was generously objected to by Mr. Kimberley, on the ground that he would not accept any payment until the value of the manure should be clearly ascertained. To effect this object, some gentlemen in his immediate neighbourhood were permitted to witness the application of the manure by the side of horse dung, on different fields and soils at Trotsworth, and to observe the progress of the several crops at intervals during the last season: the results of these experiments has been perfectly satisfactory, the crops at harvest maintaining a character equal to those dressed with horse manure, and

at a saving of four-fifths of the expense as compared with the latter material.

The locality of my own land to Mr. Kimberley's farm enabled me, through his kindness, to procure several cart-loads of his liquid, with which I made a variety of experiments too numerous to insert in this letter; but the results of which I have communicated to that gentleman, and I shall exceedingly regret, considering the great boon held out to the nation at large, and the very moderate terms on which it may be obtained, that the development of this important discovery should be retarded or withheld for want of a prompt and liberal spirit on the part of those who are so deeply interested in the economical cultivation of our native soil.—I am, Sir, your obedient servant, A SUBSCRIBER

to the pamphlet above-mentioned.

Egham, Surrey, Dec. 14, 1838.

ANSWER TO W. W's. QUERIES ON THE COMPARATIVE MERITS OF SHEEP.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—Among the many interesting questions of your Hertfordshire correspondent, W. W., I find one on the comparative merits of the Down and half-bred sheep, which are hardiest, best to fold, come earliest to maturity, &c., &c.? Having been a breeder of a cross very similar if not altogether like the one he alludes to, (which I believe to be hardier than the Leicester) the improved Cotswold and Down Ewe, for eight years, and having persevered in it with the express view of producing a distinct breed of sheep, I may probably be enabled to give him some little interesting information on this important subject; but, as it is not my wish to trespass on your columns at too great a length, now that they are filling with the accounts of the different Christmas cattle shows, I beg to refer him more particularly to the *Farmers' Magazine* for January last, or the *Mark Lane Express* of the 4th December, 1837, where he will find my opinions, founded on the results of then seven years' experience and unceasing watching, fully expressed. I presume the object at which W. W. aims, is to be made acquainted with the description of sheep, the most profitable; now this must necessarily involve two questions, viz., which are most profitable for breeding, and which for fattening? or is there a description of sheep, which beyond any other, will pay the breeder on the average of soils, and the feeder on any system better than another? I hold that there is, and that on any soil where folding is required, except that of the poorest nature, and which consists of a wild range of poor Down land, where no large sheep of any breed can be kept to advantage, the half-breds will beat any other folding sheep yet known: the farm on which I keep them has this autumn been valued at eighteen shillings an acre, (exclusive of tithe) for the arable, with a moderate portion of water-meadow, of course higher; part of it is farmed on the four field and part on the five field system. The flock for many weeks in the autumn travels frequently nearly two miles from the fold, and the same distance back the same day, and every successive year more strongly confirms the opinion I have so often publicly expressed, and as often sought to have tested (as yet in vain) by a fair, impartial trial, that no breed of sheep will pay the breeder so well, or return to the grazier so much wool and mutton, in value, in proportion to the food consumed.

By the cross the wool is rendered very superior to the original long wool, while it loses little, if any in weight; it is also of more value per lb. than

Down wool, and at least *two-fifths* heavier, averaging for shearling or teg wethers nine pounds each fleece, taking a hundred together; the carcass at from 13 to 15 months old is allowed to be riper, or in other words, to bear a better proportion of fat and lean, and more equally distributed both internally and externally, than any other young mutton; the size at this age will vary according to the object of the breeder—whether he aims at size or not. I am now breeding somewhat smaller, and pasturing the same numbers of half-breds on an equal number of acres as my neighbours do of the Hampshire downs; but I have bred them weighing nineteen stone (of 8lbs.) five pounds, at fifteen months old, fed by Mr. Cannon of Maidenhead, Berkshire, who sold one hundred of that age, (or under,) in April, 1836, at or nearly an average of four pounds each, a price, I believe, unparalleled, unless for fancy stock.

With regard to the next question of W. W., “whether the cross of the long woolled sheep with the Down ewe, or the Down ram with the long woolled ewe, is best,” I submit the former is far preferable, inasmuch as the offspring is generally impressed with more of the qualities existing in the male, than in the female, and length of wool, width of carcass, and aptitude to fatten, being more conspicuous in the white-faced breed than in the Down, it follows the first named method is much to be preferred. With the view, as before stated, of perpetuating a distinct breed, (in which attempt, though in a different sheep, I have the satisfaction of seeing myself followed by no less a person than Lord Western) I have been for *eight years* breeding half-breds from half-breds, a practice always condemned by theorists, but which experience of the above number of years, enables me confidently to maintain is the best, indeed, only efficient way of arriving at the desired points, viz., a uniformity of wool of superior value, of mutton of middle quality between Leicester and Down, with close resemblance in the feature and colour of the flock; this I am now fast accomplishing, in my late bred sheep it is already accomplished to my satisfaction, and my shearling ewes or tegs are of such a description, that any breeder of sheep would be pleased to see, and I could wish, by way of friendly competition, to exhibit them upon equal terms against any breed the kingdom produces, as possessing a *combination* of qualities the most *useful and profitable*. If W. W. is acquainted with Mr. Betts, who lives near Watford, Herts, he will there find 150 lambs which I sold him, 100 being of my breed, and the 50 of the same description, but a little coarser, from these 50 tup lambs were selected, with them are 100 second cross lambs from Down ewes by my half-bred rams, which I understand are particularly handsome.

To W. W.'s eighth question I am unable decisively to speak, never having tried either the pure Leicester or Lincoln, but probabilities strongly incline me to the opinion that the new Leicesters, or improved Cotswolds (which latter is a cross on the Cotswold ewe by the new Leicester ram) possess by far the most approved qualities, both of wool, symmetry, and mutton, and my reasons for preferring the improved Cotswold of the two, are, that while it bears a heavier, longer wool, with the same beautiful symmetry, and equal disposition to arrive at early maturity, it is bred on hills as *poor* as the vale of Leicester is *rich*, consequently we have every reason to calculate that a greater hardihood of constitution will be a leading characteristic in the progeny.

I am, Sir, your's respectfully,

J. T. TWYNAM.

Whitchurch, Hants, Dec. 11, 1838.

THE CORN LAWS.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—In your last number of the “Farmer's Magazine” there is an address to the landowners and occupiers of West Somerset on the subject of the Corn Laws. It is from the mischief arising from the efforts of *such avowed* friends of the agricultural interest that we have chiefly to guard against. There are too many who are inclined to give way to a *supposed* clamour against the Corn Laws, and to advocate a Don Quixotish abandonment of protection for fear it should “too often be repeated” that the Corn Laws were for the protection of the agricultural interest only. Why this affectation of ignorance on the question? Is there any one so foolish as to disbelieve that the Corn Laws are for the protection of the agricultural interest only. For what purpose else could they be framed, and what landed proprietor or statesman would fence from the avowal of that being, the full and only purpose of them? Surely none but those who would by deceit endeavour to mislead a measure to disguise the real design of it, and thus shew an unfitness for their station as statesmen, or for the enjoyment of a property they cannot or dare not defend openly. It is time to cast away such truckling to expediency and clamour. Let the question be openly and fearlessly debated on its just grounds, and we need not fear for the result, but thus to work the way of what is now only an opposition from a weak minority is folly. As an example of what injury the agriculturists may expect from the adoption of an insufficient fixed duty I will beg to refer to the growth of rape. What has been the effect of the low fixed duty on rape on its growth in this country? There was an influx of foreign, which reduced the price one half, from about 40*l.* per last to below 20*l.*, and in consequence English growers became tired, and then the foreigner exacted nearly the former price of 40*l.*, till again the English growers competed, when the price once more declined so as to drive our cultivators out of the field, and once more the foreigner sacked high prices. The great bulk of high priced rapeseed will I am convinced be of foreign growth. What would have been the effect on our cultivators if they could not have resorted to the growth of grain, and what could they have recourse to if our legislature were to give the same facility to the consumption of wheat as they have to that of rapeseed? It is the surplus of other countries that we must look at, and that surplus would under a fixed duty come in at the lowest rate of price. Wheat might be bought to come here at 10*s.* duty to be afforded at 2*l.* a quarter in the face of our harvest, and the more the price is lowered the more is the cultivator compelled to sell his produce, so that we might be compelled to sell our new wheat even lower than 40*s.* per quarter. In times of real scarcity also 10*s.* duty even would not be maintained as greatly enhancing the cost to the consumer. The average system has worked much better than any fixed duty we can obtain. From our heavy burthens in taxation our prices must be higher than those of other countries free from them, and we shall always be able (frost or war excepted) to get supplies by paying greater prices than the average of prices in those countries, and higher prices are necessary here in time of scarcity to prevent distress at home. An inadequate fixed duty is sure to reduce our prices to the average of other countries plus that duty a graduated scale will, in expectation of low duty, and the necessity of a scale of prices ranging here to obtain that, raise prices abroad to an approx-

imation to our limit of price for importing. How far it would be politic to increase the minimum of import duty, and thus to let our exchequer share the rise with the foreigner is I admit a subject worthy of consideration, as not enhancing the price to the consumer, but inasmuch as it would help the payment of taxes, would benefit the country at large. The variation of duty and prices are the only safe limits for admission or exclusion of import, and there should be none except when needed, of which price will usually be the most certain index. I am afraid I am occupying too much space in your columns, but the subject must be my apology. I am, Sir, yours,
Holderness, Dec. 10. R. IVESON.

GRAND PLOUGHING MATCH.

On Tuesday, the 5th December, one of the most animated and patriotic exhibitions ever witnessed took place near Murthly Castle. The late Sir John Archibald Stewart, of Grandtully, last year had intended, in order to stimulate the agricultural energies of the tenantry of his numerous estates, to present them with a splendid silver medal and other prizes, to be competed for at a ploughing match. Death has since deprived the country of the worthy Baronet who originated the patriotic scheme, but his brother and successor has nobly carried his predecessor's intentions into effect, and again has the skill and science of our ploughmen been called into exertion. The field selected for the display was the large haugh, nearly opposite Murthly Castle on the north bank of the Tay. Long ere day dawn, seventy pairs of horses had passed Dunkeld Bridge for the combat, and by eight o'clock nearly a hundred competitors had arrived, and a concourse most numerous of the inhabitants of the surrounding country had assembled to witness the contest, eager, if possible, to anticipate the award of the judges. The gentlemen appointed to this difficult office were Messrs. Inches, Marlee House; Constable, Hill of Errol; and Jack, West Mill of Kinnaird.

The prizes were awarded as follows:—

- 1st, to Donald Stewart, Lagg of Grandtully.
- 2nd,—John Stewart, Meikle Tombaue, Strathbraan.
- 3rd,—Robert Dow, Dalbathie.
- 4th,—Donald Keir, Ballanleek, Strathbraan.
- 5th,—James Robertson, Pitleoch, do.
- 6th,—George M'Farlane, servant to Mr. Campbell, Mains of Grandtully.
- 7th,—Alex. Chapman, Airtully.
- 8th,—Wm. M'Kenzie New Delvine.
- 9th,—John Tyrie, servant to Mr. Sime, Airtully.
- 10th,—Peter Duff, Lednaskae, Grandtully.
- 11th,—James M'Laren, Airtully.
- 12th,—James Duff, servant to Mr. Robertson, Ballanloan, Strathbraan.
- 13th,—David Malcolm, servant to Mr. Bruce, Airtully.
- 14th,—John Robertson, do. do. do.

The Medal given as the first prize is of the most splendid description, of the most chaste design and beautiful workmanship, and value 6*l.*; it bears on the one side the armorial bearings of the family, on the obverse, the ordinary agricultural emblems, with the inscription of

Presented
 by
 Sir Wm. D. Stewart, of Grandtully, Bart.,
 to
 Donald Stewart, Lagg of Grandtully,
 as First Prize,
 at a Competition of 93 Ploughs
 which took place on his Estate,
 5th Dec., 1838.

The other prizes were handsome gratuities in money, and to the first was added a sovereign.

AGRICULTURAL CHEMISTRY.

No. III.*

BY HENRY R. MADDEN, ESQ., L.R.C.S., EDINBURGH.

(From the Quarterly Journal of Agriculture.)

From the remarks we have made on vegetable nutrition, I am sure it must appear self-evident to all, that the action of the “*permanent*” constituents of soil, namely, *silica, alumina, carbonate of lime, &c.*, must be purely mechanical; and that it is the *organic* matter only, which is added to the soil, that can have any physiological or chemical influence upon vegetation. It is clear, therefore, that the success of all farming operations will in a great measure depend upon requisite attention being paid to the supply of these “*transient*” ingredients, as they have very properly been denominated. Nevertheless, it is absolutely necessary that the proper texture of the soil should be continually preserved, which can only be done by having constant recourse to various mechanical operations, which have from time immemorial been used for this purpose. These may be advantageously divided into two classes. *First*, those which are employed to *alter* the natural texture or condition of the soil, as *draining, paring, and burning, &c.*; and, *secondly*, those by which the natural texture is *restored*, after it has been altered by the various processes which have been carried on in the soil, as *ploughing harrowing, &c.* We shall now therefore, say a few words with regard to the theory of these operations. *First*, with regard to *draining*. That certain plants only can grow in soil which is constantly wet and boggy, is a fact that must be known to all those who have taken the trouble to look about them; and to such it must be equally evident, that the plants which *do* generally inhabit such situations, are far from being the most useful. To grow those vegetables, therefore, which are most prized by the agriculturist, the very first point to be examined into is the condition of the land with respect to *water*; without due attention to which, no soil, however well constituted in other respects, will be found capable of being cultivated by any means to the greatest advantage. When a farmer therefore intends to bring any new piece of ground into cultivation, he must first examine its natural herbage; and to one who has any knowledge of “*country matters*,” this will be quite sufficient, since the general character and appearance of the sward of a wet soil is so distinct, that it is impossible to mistake it. For example, wherever the grass is coarse interspersed with *rushes* and *carices*, we may conclude that the soil is wet, and that the water it contains is frequently stagnant; if however, these symptoms are not very evident, the farmer must proceed further,—let him see if the herbage is the same in all parts of the field, or whether it is coarser in some places than in others; should this be the case, let him next determine the position of the coarser parts, whether they occur on the rising ground or in hollows. Should the latter be their prevailing position, more particularly should the grass of *all* the lower parts of the fields appear to be in a less thriving state than that on the more elevated portions, there will be good reason to believe that it is owing to some defect in the texture either of the soil or subsoil, by which the water

* In No. 2 of this series, p. 348, line 19, *delete* (common salt) *after* carbonate of soda.

that naturally falls on it is prevented from getting easily away. Again, should any spot show evidence of moisture, that should at once be examined, and its cause if possible ascertained, more particularly as to whether it depends upon the existence of a spring, since it frequently happens that soil, which of itself is of the very best texture, may be rendered bad, and nearly useless, by such an occurrence. When the fact is once ascertained, there is no want of remedies. Draining has, I am happy to say, attracted so much attention of late, that it is now brought to a very fair degree of perfection,—in fact, the difficulty is not how to *drain*, but how to *persuade* the farmers and landlords to have their fields drained; for strange as it may appear, still it is “*not less strange than true*,” there are many farmers who are so devoted to their old ways, that although they cannot look around them without the practical advantages of draining presented to the eye, still they are content to grow rushes instead of grass, rather than be at the first expense of having their land rendered permanently fertile: by which means, instead of annually losing the rent of such land, they would be receiving a large profit upon the outlay which was necessary to effect the cure.

On account of so much having been already written in this Journal upon the principles and practice of draining, I shall not occupy my limited space with a recapitulation of the various methods of performing this valuable operation, but shall merely, in the briefest manner possible, give an outline of the scientific principles upon which it is founded.

The fundamental law upon which the success of all draining operations depends is simply this,—that water, in common with all other *fluids*, cannot support itself in an inclined position, but will always endeavour to obtain a horizontal one, unless opposed by insurmountable obstacles; hence, so long as the surface upon which water rests is in the slightest degree inclined, it will continue to move onwards. All therefore, which is required to be done, in order that land should be thoroughly drained, is to ensure a permanent *oblique* channel for the water, the lower end of which must of course ultimately terminate in some proper receptacle, as a pond, river, or the like. In securing this channel there are various circumstances to be considered, the neglect of any of which will inevitably produce a failure:—These are—

I. From whence does the water proceed, from above or below? Or, in other words, is the moisture owing to *retained* surface water, or *emitted* spring water? 2. The texture of the soil must be particularly attended to, If it be a stiff clay, and the cause of the damage *surface water*, the first thing to be done is, by constant tillage, to render the clay as loose as possible,—to raise the land in ridges, and to *furrow-drain*, as it is termed. If again the clay is of a lighter kind, as a good *clay-loam*, for example,—or still more, if the soil be sandy, the subsoil likewise possessing an open texture, the fault will almost invariably depend upon the existence of a spring; in this case, the highest parts of the land should always be drained first, as it sometimes happens that this effectually cures the evil without incurring the expense of draining the whole. There are other cases, however, in which, without an intimate knowledge of geology, it would be useless to attempt draining; for example, in those perplexing instances where the *subsoil* consists of irregular strata of *clay* and *sand*. Many other cases, too, might be mentioned

all of which prove that, to practise draining successfully, a man must make it his chief study, and depend upon it, it will always, in such cases, be found more economical in the end for farmers to employ a professional drainer, than for them to run the risk of a failure, by attempting it themselves. Before concluding this subject, I may just enumerate the cases in which draining may be required.

I. TO GET RID OF SURFACE WATER.—1. In all stiff horizontal clays.

2. In horizontal lands of all textures, if reposing on a subsoil of impervious clay.

3. In ferruginous soils of any texture, where there exists the *moor-pan*, as it is termed,—by which is meant a peculiar impervious stratum, composed chiefly of iron, which often exists between the soil and subsoil in such situations. Here, however, the breaking of the pan might greatly assist the subsequent draining of the land.

II. TO GET RID OF SPRINGS.—Wherever these exist, it is clear that the only way to prevent them injuring the land, is by giving their contents a free exit, in some direction where they can do no harm.

PARING AND BURNING.—This operation is recommended by several writers as the readiest way of bringing many kinds of waste land into a fit state for immediate cultivation; and yet there is no process upon which the opinion of different scientific men appears to be more at variance,—some strangely opposing it as an unwarrantable waste of manure, and others recommending it as strenuously on the score of economy! It is evident therefore, that one or other of these two sects must either be guided by erroneous principles, or neither of them have sufficiently investigated into *all* the particulars of the subject upon which they have written. The latter of these, I think, we shall be able to prove to be the cause of this, as of many other cases, in which directly opposite opinions are held by different men upon the same subject. We shall therefore, carefully discuss the point under the two following heads.

First, We shall state the different theories which have been propounded to explain the action of this process, and mention the various ways in which it may possibly act: and, *secondly*, See how, and in what cases it may be advantageously applied to practice. The various theories which have been promulgated with reference to this subject are chiefly the following, namely, 1st, That it acts by altering the texture of the soil; 2d, That its action depends upon the heat decomposing inert vegetable matter; 3d, That the cause of the improvement depends upon the formation of *vegetable alkali* (*carbonate of potass*) which acts as manure; and 4th, That the good effects are caused by the destruction of certain injurious substances which previously existed in the soil. The first of these theories is the one proposed by Sir Humphrey Davy, and has certainly the merit of being founded upon strictly scientific principles; for example he states that it is injurious, except upon clayey soils, but that, in the latter case, the effect of the heat is to alter the constitution of these soils—in fact, to render them in texture much more similar to sands; to use his own words, “It may, when judiciously applied, convert a matter which was stiff, damp, and, in consequence, cold, into one powdery, dry, and warm, and much more proper as a bed for vegetable life.” Now that this statement concerning the alteration of texture is strictly true, needs no

other proof than a reference to the process of brick-making, which essentially depends upon the above fact. If for example, we powder a brick, we shall find that in this state, the clay possesses properties extremely similar to those of sand, namely, that when mixed with water its particles do not adhere together, and form a cohesive plastic mass. The chemical change which it has undergone is simply its being deprived of water, and as I stated in my first paper, "dry alumina cannot be made to unite with water, except through the medium of chemical solvents;" so that having once completely deprived it of that substance, there is extremely little chance of its ever resuming the form of a *hydrate*. Moreover, during the process of burning, the alumina enters into chemical union with the silica and iron of the soil, should any exist, and forms with them *insoluble* compounds, which are decomposed with great difficulty; and hence it may be extremely useful in lands where the iron is liable to become soluble, in which state as before mentioned, it acts as a powerful poison to almost all vegetables. An objection might here be raised, that although paring and burning altered the texture of the soil actually exposed to the fire, still this quantity would be too small, when spread and mixed with the remainder, to produce any material difference of texture; but upon calculation, it will be found, that even if the turf lost one half of its weight by burning—which could only take place when a large quantity of vegetable matter was present—as it is generally cut two or more inches thick, there would be added at least $14\frac{1}{2}$ per cent. of altered alumina (having the *mechanical* properties of silica) to the soil; six inches being taken as the average depth of tillage.

Sir Humphrey Davey likewise takes notice of the second method by which paring and burning might be useful, namely, by decomposing inert vegetable matter. He says, "Although it destroys animal and vegetable matter, nevertheless this is more than compensated by the good it effects upon the texture, and in fact, *the carbon of the ashes may be more useful than the original vegetable fibre*." Here however, it is not so easy, fully to comprehend the author's meaning; for we have already seen that, in order for any substance to be absorbed by plants, it must either be soluble in water, or in an extremely minute state of division; whereas, *carbon*, when fully developed, or, in other words, when completely disorganised is capable of being dissolved by no known agent except fire; and as to a spontaneous formation of *carbonic acid*, by a union taking place between it and oxygen in the cold, if such is the case, it certainly is a new chemical fact; and lastly very little if any of the *carbon* left after the incineration of turf, will be in a sufficiently minute state of division to admit of its being absorbed in the solid form. The good effects, however, may depend upon the burning acting in the following way upon the inert vegetable fibre of the soil. Although a great part of the organic matter must be completely disorganised by the intensity of the heat, still a portion of it may not suffer decomposition to the same extent, and this, when acted upon by the *carbonate of potass*, produced during the process, may be easily converted into *soluble organic* food, which, of course, would act as manure; moreover, it is very well known that an accumulation of undecomposed vegetable fibre is injurious to plants; in fact, is one of the most frequent causes of "*loss of heart*" in old pasture land, so that its destruction might be beneficial.

Thirdly, The utility of the process being dependent upon the formation of *carbonate of potass* has already been shown. In calcareous soils there would moreover be formed, in addition, a certain quantity of "*hot lime*," which of course would act in the same manner as if applied after it had been burned in the kiln. The great objection which has been made to the process of paring and burning, will be best considered here, as it is this "waste of organic matter" that is so severely reprobated. Those who hold this opinion, state that the quantity of alkali which is formed, is by no means sufficient to compensate for the immense loss sustained by the large quantity of organic matter which is necessarily destroyed during the process; and in its place they propose paring the land, and forming the part removed into compost heaps, in order to be decomposed by means of lime. That this might possibly be applicable in a few cases there can be no doubt; but to adopt it as a general principle, would be extremely dangerous; for I fear that, practically, it would be the very reverse of economical; for when the price of the lime, the expense of making the heaps, and all the other minutiae, are taken into consideration, it will be found that, in fact, such a procedure would be attended with far more expense than would be compensated by the quantity of manure gained. I have heard a remark by a very sagacious farmer, which I think will apply extremely well here, namely, that, "in the management of a farm there is a certain point, beyond which if a man goes he will find himself a loser instead of a gainer; for it will never answer to keep a market farm like a garden." So also there are many things, which when considered abstractedly, might appear economical, when put into practice would be found to be exactly the reverse.

The last method in which paring and burning has been supposed to act, is that promulgated by Professor Rennie: according to his hypothesis, the advantage derived from this process depends chiefly upon the heat decomposing certain pernicious matters contained in the soil. This statement was made on account of the importance that has been attached by many late writers to some experiments performed some years ago by M. Macaire, by which he endeavoured to prove that plants ejected from their roots substances which were injurious to them, or, in other words, that plants passed *excrementitious* matters into the soil. By this means they have accounted for the necessity of a rotation of crops, and many other circumstances, the causes of which had before been wrapped in obscurity. Now, whatever may be the merits of this theory—and we shall have an opportunity of discussing it fully when speaking of the rotation of crops—it, like all others, has been made use of, by some at least, to explain almost every operation in husbandry: for example, Professor Rennie would have us believe that the chief if not the only beneficial effects to be derived from the various operations of paring and burning, fallowing, irrigation, and the like, depended upon their freeing the soil from this *excrement*. These, with the exception of the first, will be considered afterwards; we shall, however, here make a few remarks upon how far the effects of paring and burning can be explained upon this hypothesis. One of the chief arguments which he adduces in support of this statement, namely, that it is not the formation of ashes, and their action as manure, which is the cause of the improvement, but

that the whole amelioration depends upon the decomposition of the excrementitious matters—is, that when fires have been lighted upon grass, the sward is afterwards most luxuriant for a certain distance round the spot occupied by the burning mass, or, in other words, as far as the heat of the fire has been sufficient to decompose the excrement.* Now a moment's consideration will, I think, be sufficient to show the fallacy of this argument. First, is it likely that the spot itself on which the fire stood should have a luxuriant herbage, when every root and seed contained in the soil must have been completely destroyed by the intense heat? And again, how is it possible that the heat could be sufficient to decompose the *excrement* (an *organic* compound) for *some distance* round the spot, and yet that the roots of the grass (*organized* bodies likewise) should not be in the least degree injured? Moreover, although this alone would be sufficient to show the instability of the argument—the fact related by no means proves that it is not the effect of the ashes of the plants burned; for, since the active part of these ashes is extremely soluble, the very first rain would carry it into the soil, and unless it were either extremely loose, or perfectly horizontal, a portion of it would most certainly spread for *some distance* round the spot, and hence the increased luxuriance. So much for all the theories which have deduced as explanatory of this process. We shall now shortly recapitulate the various methods in which it may possibly act.

1. In stiff clays, paring and burning may be of value, by depriving a certain portion of alumina of its *chemically combined water*, thus giving to it the mechanical properties of sand, and hence to a certain extent altering the texture of the soil.

2. In cases where iron exists in the soil, which is liable to become soluble, this process may act beneficially, by causing a chemical union to take place between this substance and the alumina and silica, and thus rendering it incapable of being again dissolved; and in this manner doing away with one cause of "*loss of heart*."

3. By destroying a large quantity of inert vegetable matter, the land may be greatly *cleaned* and improved; by which means another cause of "*loss of heart*" is overcome.

4. By the formation of alkaline ashes (carbonate of potass), and the subsequent action of these upon the remaining organic matters of the soil; thus converting them into *soluble* food.

5. In calcareous soils the chalk will be reduced to lime, thus increasing the quantity of alkali found in this particular instance, the subsequent effects of which will of course be the same as in the preceding case.

6. By destroying the seeds of useless plants, and at the same time most probably the larvæ of innumerable injurious insects.

7. The process of paring and burning being of course followed by ploughing, the land will thus be thoroughly stirred up, and fully prepared for the subsequent operations of husbandry.

Thus we have at least seven excellent reasons in favour of this operation, and only one against it, which we have already seen to be in a great measure futile. We shall proceed therefore to say a few words in reference to its practical application. These remarks will require to be indeed very brief, since it is clear that what has been already said concerning the methods in which the process may act, will at once suggest to the *thinking* farmer the cases in which it may be applicable. I shall

merely, therefore, take this opportunity of remarking how impossible it is to lay down practical rules upon any one operation in husbandry, which can be applicable to all cases; in fact, I am convinced that the chief cause of practical agriculturists not giving in to the suggestions of men of science, is, that the latter are so extremely apt to lay down general rules, without at first considering carefully all the various circumstances, local or individual, which may influence greatly the feasibility of the plan proposed. For example, with reference to the suggestion of making compost heaps after paring, instead of burning the mass, the following circumstances would have to be carefully considered,—1st, Whether there is a scarcity of manure, and consequently that great care must be taken to husband all that can be got at; 2nd, Whether lime can be obtained with facility, and at a trifling expense; 3rd, Whether on examination the soil is not already full of calcareous matter; 4th, Whether the trouble and expense of carting the lime, making the heaps, turning them, and allowing the land to lie useless until the compost is fully formed, will be compensated for by the value of manure gained. Without due attention to all these circumstances the farmer would very possibly find in the end that he was a loser instead of a gainer, and that, in endeavouring to carry his economy to the greatest possible extent, he had, in point of fact, greatly increased his expense. Thus we see that paring and burning is the easiest, quickest, and most economical way of bringing poor cold clays into a fit state for cropping, particularly if stocked with undecomposed vegetable matter, unless under the peculiar circumstances above mentioned; and that likewise it may be useful for sandy soils, should these be liable to "*loss of heart*," either from the existence of iron in a soluble state, or, as in the former case, from the accumulation of vegetable fibre, more particularly if the soil has already a sufficiency of lime; but should this not be the case, unless lime were expensive, it should be tried first, as in many cases it will be found the most economical. The above methods are those chiefly in use for altering the natural texture of soils, and, as has been shewn, are extremely useful for that purpose. In addition to these, however, there has been a great deal said of late concerning the judicious admixture of soils in order to improve their fertility, as, for example, adding clay to sand, and *vice versa*. Now, however plausible these suggestions may at first sight appear, it is very doubtful whether they will ever prove of any great practical value; for there are such a variety of collateral circumstances to be taken into consideration, that it is difficult to see how they could possibly be put in practice, without incurring a much greater outlay of capital than the increased fertility of the soil would ever recompense; for, when we consider the immense quantity of sand or clay, as the case might be, which would be necessary to effect the requisite alteration of texture,*—when we calculate the time and expense

* About $120\frac{3}{4}$ cubic yards of earth would be required to cover each English acre, one inch thick, which, as before stated, taking six inches as the average depth of tillage, would, when thoroughly mixed, only add $1\frac{1}{2}$ per cent. of sand or clay to the soil. This shews in a forcible light the practical advantages of paring and burning, over artificial admixture in all cases where the texture of the soil is too stiff.

of digging, carting, and spreading the soil,—the repeated tillings requisite to mix it properly,—and, moreover, when we consider that, unless the soil added were *surface-soil* (which could extremely seldom be the case), we are adding so much inert mineral matter, which will necessarily impoverish the original soil to a great degree, and hence require large quantities of manure to be added;—when, I repeat, we take these and many other circumstances into consideration, I conceive that, however plausible the idea of an artificial mixture of soils may be in theory, it will not, in the present state of husbandry at least, be found applicable to practice in any instance where economy is a consideration.

We shall now proceed to consider the various methods which are had recourse to by farmers, in order to *restore* the natural texture to soil, after that has been altered by the various processes which have been carried on in it.*

When earth has been for a long period exposed to the weather, however well pulverized it may have been at first, it will—unless it consist almost entirely of siliceous matter—become consolidated to a greater or less extent, and thus be rendered unfit for many of the operations of husbandry. Moreover, if, in addition to mere exposure, the soil should have had an abundance of vegetation upon it, the root fibres of all these plants will of course remain in it, and thus tend in a still greater degree to bind it together. To obviate these difficulties, as well as to facilitate various other processes, farmers have, from time immemorial, had recourse to various mechanical operations for restoring the soil to its original state: these are *ploughing*, *harrowing*, and the like, by means of which the earth is fully broken up, the root-fibres which it contains completely separated, and the soil thus reduced to a comparatively fine powder. This preparation of soil, of course, differs in degree according to the foulness of the land; for example, much more preparation is requisite after a *grain* than a *fallow* crop, and for this obvious reason, that the latter is in most cases entirely removed from the soil, roots and all, whereas in the former case the root is almost invariably left behind: grain crops too, from not permitting of hoeing, &c., during their growth, tend greatly to promote the increase of weeds, on which account a longer and more careful cleaning is of course rendered necessary. In a slight sketch of the science of farming, like the present, it would of course be quite out of place to enter into any of the minutiae of practice connected with the mere *mechanical* operations of husbandry. A very few words will therefore suffice on the subject of *ploughing and harrowing*.

These operations, as before mentioned, are had continual recourse to by the farmer, in order to keep his land *clean and open*, and at the same time render it fit for the reception of seed; and the principles upon which they act are purely mechanical, the plough being merely a modification of the spade, so as to admit of the substitution of *draught* for *manual labour*; and the harrow again merely a horse-

rake. It will be, therefore, quite superfluous to occupy any space in explaining the principles of such well known operations.

Not so, however, with regard to the various kinds of *fallowing*, which are used by farmers as aids to ploughing, &c. in cleaning and preparing their land; for here a great many circumstances require attention, all of which must be examined scientifically. *Fallowing*, it is well known, implies subjecting soil to various ploughings, harrowings, grubblings, &c., and at the same time allowing it to remain for a certain period, either without sowing any crop upon it, as in *perfect fallows*; or arranging the seed sown in such a manner that they will suffer the land to be continually cleaned during the whole period of their growth, as in *fallow crops*. These two of course are mere modifications of each other.

The pure fallows will be best considered under two heads, Winter and Summer, because, although a complete fallow occupies both these seasons, still the changes effected in the soil are extremely different during the early and latter parts of the process.

WINTER-FALLOW.—All land which is to be either thoroughly fallowed, or prepared for a fallow-crop, is well ploughed in Autumn, after the harvest is completed, and this should be as deep as possible, eight or nine inches at least, or even the trench plough may be used if it appear necessary. Great care should be taken in this operation that the land be laid in such a manner as to keep it as dry as possible, more especially to prevent the surface-water from stagnating on any one spot; for which purpose the method of *cleaving with open furrows*, as it is called, is the most effectual, as by this means the ridges are divided in two, and hence the number of water-courses doubled; in other cases again, *gathering up* may be had recourse to for the same purpose. After this ploughing, the land is allowed to rest until the following spring, and during this interval various changes take place, which it will be necessary for us to consider carefully; these are the destruction of weeds, and probably insects, and the more complete pulverization of the soil. One of the chief advantages to be gained by fallowing is undoubtedly the destruction of weeds, and consequently, if the land be ploughed in the Autumn to a considerable depth, and the under surface exposed to all the severity of the winter, the tender fibres of the roots of these weeds are thereby destroyed, and the plants themselves of course die; so that, for perennial weeds, the winter-fallow is an effectual remedy; the annual ones, however, have, long ere this period, shed their seeds, and consequently a great many of these may escape injury. In addition, however, to the destruction of weeds, the Winter-fallow is supposed to clear the land of many insects, which during these months retire below the surface of the soil, to protect themselves from the severity of the season. This, however, is not found to be strictly correct, and I doubt if the winter-fallow is ever very effectual in promoting the destruction of insects, and for this reason, very few of these animals penetrate to any considerable depth into the soil, the average being from three to four inches; if, then, the ploughing is carried to the depth of eight or nine inches, it follows that by this means the insects are even better protected from the inclemency of the weather than if the land had been left untouched;* and the spring cross-ploughing,

* Of course these remarks refer only to land which has already been subjected to cultivation, since it is evident that soil which has never been broken up for agricultural purposes must have remained for so great a length of time in grass, or some such state, that this may legitimately be termed its natural condition; and consequently pulverizing such soils may be considered as *altering* their texture.

* Of course this refers only to the greater number of the insects, for some of them will undoubtedly be exposed between the furrow-slices, and thus most probably be destroyed.

harrowing, &c., will be sure to turn them up, so that they will then be all ready to return their thanks to the farmer for his kindness, by doing him all the damage in their power. The same holds true with the germs of annual weeds; these being self-sown, of course lie near the surface, and the ploughing will effectually prevent them from being injured by the cold, even should the season be sufficiently severe to destroy them were they left in their original position. The winter-fallow is especially useful in breaking up obdurate clods of earth; this change is brought about by various means, as the constant exposure to all the inclemencies of the weather, &c., but more particularly by frost. When a frost occurs, the water which is contained in the interstices of the clods of earth is of course converted into ice, during which change it has been distinctly proved that it expands with great force; so that, by this expansion, the particles of earth are of course separated from each other, and thus the whole mass rendered much more friable. This probably is the most essential benefit derived from the Winter fallow, for it not only does away with the necessity of the repeated ploughings and harrowings which the soil would otherwise require to bring it into a fit state for receiving the seed, but it at the same time greatly facilitates the subsequent removal of root-weeds, &c.; and in this manner therefore makes the land beautifully clean for the spring sowing.

SUMMER FALLOW.—This is the true fallow, and is had recourse to for the express purpose of cleaning the land thoroughly, both of annual and perennial weeds, and at the same time to refresh it by rest, and renew it by a plentiful addition of manure; so that after Summer-fallow land is considered to be in the highest state of perfection,—in fact, when used, it always forms the commencement of the rotation. A great many speculations have been hazarded upon this point, both by practical and scientific men; some of the former in objecting to the process as an unnecessary waste of time, and many of the latter in endeavouring to explain its mode of action. With regard to the first of these I shall say but little, as that would require too much detail: it may be remarked, however, that the best farmers of the true wheat soils (clay loams) agree, that, on the whole, the Summer-fallow is the safest preparation for this crop; and, moreover, that, if the clay be very obdurate, it is indispensable, in order that the land may be kept clean and open. For the lighter soils, however, the adoption of fallow-crops has almost entirely superseded the necessity of true fallow, and is certainly the most economical.

With regard to its action, however, we must descend more into particulars. 1st, Some say that it is useful solely by the destruction of weeds; some that it actually refreshes exhausted soils; and others hold that its beneficial effects are owing to the decomposition of excrementitious matters contained in the soil. That it is useful by destroying weeds is perfectly clear, for, by the repeated tillings to which the land is subjected, these plants are broken down in all the stages of their growth; and that farmer must be unwarrantably careless who allows a single weed to ripen on a field which is in Summer-fallow. It may likewise be useful in destroying insects, for if no vegetable is allowed to grow, they must either die of starvation, or migrate to some other spot, where they will be better provided for.

2dly. Summer-fallow is supposed actually to refresh the soil, after it has been exhausted by previous cropping; this remark, of course, must refer to the soil as it existed previous to the fallow, and

not after the addition of large quantities of manure, which always forms a part of the process; for it certainly does not require any great depth of knowledge to discover that land will become richer after the addition of a considerable quantity of manure! How then can this exposure render the soil more fertile? We have already seen that the fertility of soil by no means depends merely upon the proportion of organic matter which it contains, but much more upon the state in which such matter exists, since, as long as it is *insoluble*, it is perfectly *useless*. Hence the question comes to be, can Summer-fallowing reduce hitherto *insoluble* organic matter to such a state that it is capable of being absorbed by plants? We have already had occasion to remark, that this change is most probably effected by some process analogous to fermentation and putrefaction; to effect which purposes it is requisite that the substances be exposed to the joint influence of *moisture, air, light, and heat*. Now we shall find that the Summer-fallow combines all these requisites; by the land being thoroughly and repeatedly ploughed, the whole, or nearly so, of the organic matter contained in it must be exposed for some time to the action of these various agents, and thus putrefaction aided to a great degree, and a stock of soluble matter prepared for the next crop; in fact, the process may be very aptly compared to *cooking* previous to the seed being sown, in order that they may not have to wait for their food until they are half-famished.

3dly. Some suppose that Summer-fallow acts by the destruction of excrementitious matter. Here we have Professor Rennie's theory again. He states, that, by the frequent turnings of the earth, and exposing it to the heat of the summer sun, the dark excrementitious matters of the soil are decomposed, and the land thus rendered more wholesome for the succeeding crop; and moreover, that the reason why this process is more necessary for clays than sands is, that, in the latter class of soils, the excrement may evaporate, or may be carried down with descending moisture, provided the subsoil be open and porous; and lastly, he compares this excrement to barren peat. Unfortunately, however, for this theory, each of these statements can be easily explained, without any reference to the excretory powers of plants, which at best is not sufficiently well established at present. First, with regard to the decomposition of the excrement by exposure, and consequently the rendering of the soil more wholesome for the succeeding crop; from all that I have been able to gather from any work upon the excretions of plants, it appears that the advocates of this theory merely consider that this discharged matter is injurious to plants of the same kind, and not that it is hurtful to vegetation in general: on the contrary, M. Macaire himself states, that the excrement of the *bean* and *pea* is useful, instead of injurious, to *wheat* plants; so that the idea of rendering the land more wholesome cannot hold good, except Summer-fallow were employed for the purpose of restoring fertility to soil which had been exhausted by the constant repetitions of the same crop. Secondly, as to the clays requiring Summer-fallow more than sands; this, I take it, depends upon their texture not permitting the free action of air, &c. upon the insoluble vegetable fibre which it contains, in order to effect its decomposition; hence the liability of such soils, when left in permanent pasture, to lose heart from an accumulation of vegetable matter. Lastly, the similitude of the excrementitious matter to barren peat is improbable, from the following facts. Peat consists of undecomposed vegetable fibre, and most frequently likewise some antiseptic

substance (probably modified *creosote**), which prevents the decomposition of any organic matter, either naturally existing in it, or artificially added to it; and hence the cause of the sterility of such soils, all the organic matter being in an *insoluble* state. The excrements described by M. Macaire, on the other hand, are stated to be *soluble*; for example, that of *beans* is said to resemble *gum*. For these reasons, would it not be better to leave the excretory theory alone? At all events, until more extensive experiments have been performed, in order to prove more unequivocally than has hitherto been done, that *all* plants do really excrete a matter injurious to themselves, when placed under perfectly *natural* circumstances.

We have thus examined pretty fully into all the different methods employed by farmers, both to render the soil fit for cultivation, in the first place, and afterwards to preserve it constantly in that condition; and we have seen that all these processes are founded upon strictly scientific principles; and, moreover, that they require an accurate knowledge of these principles, in order that they may be advantageously put to practice; and, lastly, that, with some of them, it is necessary, before any one attempts to apply them practically, that he should have an extensive acquaintance with many of the higher branches of science.

With these remarks, we shall conclude the first division of the present sketch of Scientific Agriculture, as we have now finished the account of the nature and chemical composition of soil, its requisites for supporting vegetable life, and the various methods resorted to by farmers to bring it into a fit state for cultivation. Our next paper will therefore commence the all-important and extensive subject of *Manure*.

CORN LAWS.

Speech of Edward S. Cayley, Esq, M. P., on the motion of Mr. Villiers for "A Committee of the whole House to consider Act 9 Geo. IV., c. 60, relating to Foreign Corn." March 15, 1838.

MR. CAYLEY,—Sir, I agree with most of the observations which have fallen from the hon. member who has just sat down in the lucid and dispassionate speech he has made, especially as they related to the question of our foreign trade. He has shown that other nations have a will of their own; and that they will retain to themselves the supply of their own market with manufactures, in spite of our ambition to manufacture for the whole world. In addition to what he has stated on this head, I may add, that France is at this moment putting a higher duty on linen yarn, for the purpose of excluding the produce of this country. Prussia is not confining herself to supply her own internal market; but is competing with, and occasionally beating us (especially in hosiery) in the American and South American markets. And it is notorious that Belgium and Switzerland have of late years been making amazing strides in the power to compete with us as manufacturers; so that the notion entertained a few years ago, that we might create for ourselves a monopoly of the manufacturing trade of the world, each day discovers to be more vain and delusive. It therefore, better becomes us to pay, at least an equal share of atten-

tion to those customers who never forsake us, namely, the customers of the home market. Of those interested in the maintenance of the corn-laws the home market is chiefly composed. An attempt is often made, indeed, to underrate the numbers and importance of the parties connected with the agricultural interest in this country; but from data which I have, on a former occasion, stated to the house, I do not hesitate to affirm, that (including the provincial towns and the classes which are employed by the agricultural body) those interested in the welfare and prosperity of the agriculture of Great Britain and Ireland, amount to, at least, five-sixths of the whole population.

No wonder, then, that the honourable member for the Tower Hamlets (Mr. Clay), with his opinions, laments the apathy of the people on the subject. But when he states that there are few or no petitions in favour of a repeal of the corn-laws, he makes the most pointed reply to the speech of the honourable mover for their repeal. That speech was certainly replete with ingenuity and ability; but it was not convincing; and it wanted that support which he would have been the first to have made use of, namely, the support of the people. The fact is, that 12 or 15 years ago there was a cry raised throughout the manufacturing districts in favour of a repeal of the corn-laws; but that cry has now almost subsided.

And what reason is to be assigned for this? No other, I believe, than that the people have become more enlightened;—too much so to be carried away by the delusive theories which were then abroad on the subject of cheap bread. Bitter experience has taught the labouring class that they have not been in the most flourishing condition when bread has been the cheapest. Ask any agricultural labourer, at this day, above the age of 50, when he was the best off? He will answer, when corn was 8s. or 10s. a bushel. Ask him, when he was worst off? He will answer, when corn was at its lowest price, a few years ago. Even the distressed hand-loom weavers, to whom the honourable member (Mr. Villiers) on this occasion, so pathetically referred, are not, in the midst of their poverty, intent on a repeal of the corn-laws. I sat two years on the committee for inquiring into their condition—I think the hon. member was not on that committee—and a more intelligent and respectable set of men I never saw than the weavers who were summoned before us; or men more straightforward and true in the development of their sentiments and facts. Of these witnesses—I speak from general impression—I should say, at least three out of five were not in favour of a repeal of the corn-laws, although their attention was prominently drawn to that subject as one that might influence their condition. I have only had time to refer to the opinion of two of them. Richard Necdham says,—

"We complain much more of the unjust favour that has been shown to the possessors of fixed money incomes, than we do of the operation of the Corn Bill, which is to protect the landed proprietors; we have not the same objection to the corn-law as to those men receiving large sums of money as wages, salaries, and so on. We think it more unjust for the government to protect the fundholder and the monied interest of the country, than the landed interest."

And Edward Good observes—

"Since the decline in the price of corn, I do not

* Dr. Cormack's Prize Essay on Creosote.

think we have been better off. I think our wages have kept pace with the decline of corn, and gone before it in many instances."

Here is the solution to the change in opinion upon this subject among the working classes. They were taught to consider that the corn-laws were a means of upholding the price of corn, at their expence, for the benefit of the landlords only. They have found this theory contradicted by their own experience; for they have seen that, with the fall of the price of corn, landlords alone have not suffered, but that all the industrious classes have suffered along with them. The honourable mover has argued this as a question of pure self-interest on the part of the landlord. Experience has shown that it is not so. But is there no self-interest on the other side? Has the fixed annuitant no interest in reducing the price of corn and of manufactures to the lowest possible pitch, in order that his fixed income may go all the further? I do not know whether the honourable member be, himself, a fixed annuitant, or whether he be the representative of the fixed annuitants in this house; if he be, I tell him, that his interest in the repeal of the corn laws is a much more individual and selfish one, than that of the landlords in the preservation of them. In the prosperity of the landlords, the welfare of the tenant and labourer, and of at least five-sixths of the population, is also bound up. High rents cannot be dictated by the landlords; they are mere symptoms of prosperity on the part of those who conduce to the paying of them, namely, of the farmers and husbandmen, and their customers. It was this which caused Mr. Locke to declare that "an infallible sign of the decay of national wealth is the falling of rents; and that the raising of them would be worth a nation's care." Take, however, the case of a fixed annuitant. With whom is his interest bound up? Certainly not with that of the industrious and productive classes; because he has only one interest, namely, to buy goods and labour cheap, so that his fixed income may go the farthest. The industrious and productive classes, on the contrary, want to take their goods and labour to a remunerating market. Let us hear no more of self-interest, then, from those parties who are the main originators of the cry for the repeal of the corn laws.

One chief argument in favour of the corn-laws is given in an answer to Mr. Oliver, a most intelligent witness, before the Agricultural Committee of 1833, and a candidate for the Professor's chair of Agriculture in the University of Edinburgh. He was asked what effect the repeal of the corn laws would have on the working class. He went into a minute calculation, and concluded by saying that, if 3,000,000 quarters of corn (of all kinds) were regularly imported, in the place of that produced by the British agriculturist, it would throw out of bread 1,000,000 of people and 2,000,000 of acres out of cultivation. But the importation, to answer the end of many of its promoters, must be much larger than this; and the mischief and danger and distress would, of course, be proportionate. Every market of labour and of production would be surcharged, and wages and goods would fall in price, below any remuneration; and the competition for existence would be dreadful.

The honourable mover has alluded to the amount of capital engaged in the cotton trade, estimating it at somewhere about 30,000,000*l.*, or 40,000,000*l.*; a large sum, no doubt, and I do not wish to see it

depreciated in value; but we must remember that it has all grown up under the existence of corn laws. What, however, is it, compared to the amount of capital sunk in the land? In an article, I believe, in the *Edinburgh Review* (and if so, probably written by Mr. McCulloch), of a few years ago, it was estimated that a very large proportion—I think three-fourths—of the landed rental arose from the interest of capital laid out in the improvement of the soil, in buildings, &c. Now supposing the rent of the land in this country to be 32,000,000*l.*; according to this estimate, three-fourths, or 24,000,000*l.* is to be considered as the interest of capital laid out in improvements; an interest equivalent, at three per cent. (and it has not paid more), to 800,000,000*l.* of capital. And is this a capital to be lightly injured, or inconsiderably dealt with? And under what faith, and under what sanction, has this capital been so freely embarked? Why, under that very system of corn laws—I do not mean any particular act, but the general spirit of protection which it is the undisguised object of this motion entirely to repeal—a system which has been in existence in this country ever since the beginning of the fifteenth century; for I find acts passed in 1436 and 1463 to regulate the price at which exportation should be allowed, and importation cease. In 1670, also, an act was passed, extending the exportation price to 53*s.* 4*d.* a quarter for wheat, and other grain in proportion; and imposing, at the same time, prohibitory duties on the importation of wheat, till the price rose to 53*s.* 4*d.* and a duty of 8*s.* between that and 80*s.* So that there is nothing new, at least, in the system of corn laws; and it is under this system, be it remembered, that all our commercial and manufacturing greatness has sprung up.

Protection and encouragement to our agriculture is a matter of prudence, also, as it relates to the certainty of a supply of the staff of life. Whilst we depend, entirely, or mainly, on ourselves for the supply of bread corn, nothing but a visitation of Providence can interfere with our enjoyment of the most necessary article of consumption. On the other hand, if we depended, for the most part on foreign nations for our supply of food, we should be exposed not only to the hardships of adverse seasons but of the capriciousness or enmity of man. Supposing us to go to war with the country or the countries that supplied us with the greater proportion of the wheat we consumed, and they followed the plan of withholding the supplies as a method of starving us into a compliance with their hostile demands;—in what a predicament should we be! Those who have already not done so, would do well to read Mr. Huskisson's letter, published, I think in 1814, on the danger of relying on foreign countries for our supply of food. But this is not altogether a hypothetical danger. We have already had experience of the advantage a foreign nation might take of our deficiency. And here is a complete answer to those who imagine that, under the pressure of a great dearth of corn in this country, we could trust to foreigners to sell it us at the continental price, provided we had no corn laws. In 1801, there was a great scarcity of wheat; the ports were opened free of duty. Prussia had the means of supplying us; what did Prussia do? Why, finding that we gave up the duty, she put on a duty on the export of wheat from Prussia, the King refused to take it off until he saw whether the price in England would rise high enough to allow him to retain it. The following is an extract

from the order of his Majesty the King of Prussia, dated the 12th of September, 1801 :—

“ TO THE MINISTER OF STATE, BARON VON SCHIROETTER.

“ With respect to taking off the new duty on wheat I do not see that the country can suffer from its continuance to the end of this year, as the shipments of the present calendar year, cannot continue much longer, the threshing out of the wheat will not be finished before the end of the current year, and therefore the supply to the seaport towns can only begin with the month of January next year.

“ It is the fault of the merchant himself, if he has encumbered himself with a larger stock than he could send to England before the 1st October, as he is sure of a good price to that time; and the new measure of the English government for reducing the bounty, having occasioned an unnatural rise in the prices of the best wheats, will make up to him in price what he would otherwise have received in bounty. Under these circumstances, I consider it so much the more advisable to postpone the taking off the duty on wheat till the month of December, as we shall then be able to judge with more certainty whether the report of an unusually abundant harvest in England is founded or not, and regulate our measures accordingly.

“ Should the prices in England continue to that time between 50s. and 60s. per quarter, the duty shall then be taken off, and shall only be continued in full if they rise again to 80s. or 90s.; should they in this period rise something less than the last-mentioned price, the duty can be modified accordingly.

(Signed) “ FRIEDRICH WILHELM.”

Thus the King of Prussia was resolved that the consumer at least in England, should not have the benefit of the difference in price between British and Prussian wheat; and took care that Prussia should have every advantage she could take of the then precarious situation of this country, with respect to its supply of food. This example certainly holds out no very strong inducement to us to trust to other countries, rather than to ourselves, for the production of the necessaries of life.

It is affirmed by some however, that granting the necessity or policy of the corn laws, the present system does not secure a uniform and steady price. As far as any corn law can produce steadiness of price, the present does. No rational being expects that a corn law can prevent the fluctuation of prices necessarily consequent on abundant or deficient harvests. But the present law under average harvests, produces great steadiness of price; for instance, turn to the price of wheat for the last six weeks. It is as follows, in the returns for the 150 towns according to the act :—

	s.	d.
Week ending January 26.....	54	10
— February 3.....	55	4
— February 9.....	55	4
— February 16.....	55	3
— February 26.....	55	2
— March 2.....	55	3

Can any state of prices be more equable than this? And even under great abundance or scarcity, there is, if I may so call it, an obstructive principle in the graduated scale of duties which is at variance with sudden fluctuations in price. The duty falling as the price rises, tends to the admission of a foreign supply, and so modify the rise. On the other hand, the duty rising as the price falls, tends to limit the importation, and so to resist the fall. Thus it serves

the consumer in a time of scarcity, and the grower in a time of plenty. In fact, nothing can have worked better for the public than this present law. And one cause, I firmly believe, of its unpopularity, with the “no corn-law” theorists, is its practical well working. If there were a fixed duty, of 10s. or 15s. per quarter, they know that, under great scarcity, popular clamour would demand its repeal; and, once repealed, it would not be easy to re-enact it. Whereas the duty diminishing, by the present law, to the vanishing point, as scarcity approaches, leaves no room for popular clamour; since, just at the moment the clamour would begin, the duty no longer exists. The excellence, therefore, of the law, I apprehend, is the cause of its unpopularity with those who want a pretext, which they cannot at present find, for raising a popular cry against corn-laws in general.

When we talk of steadiness of price, however, where do we find it prevail? Not in the corn-growing countries; witness Dantsic and Hamburgh. Not in countries which are constant and habitual importers of corn; witness Rotterdam. In one of the agricultural reports, there is the latest decennial average from the above places, which has been made up, together with the highest and lowest prices, giving the extreme points of fluctuation at each place within the period :—

Decennial Average.	Lowest Price.	Highest Price.
Dantsic.. .32s. 10d...	21s. 8d. (1826)...	45s. 6d. (1831)
Hamburgh .30s. 2d...	20s. 0d. (1826)...	41s. 0d. (1831)
Rotterdam .37s. 9d...	25s. 6d. (1826)...	52s. 6d. (1831)
England ..56s. 0d...	39s. 0d.	66s. 0d.

According to this, there has been a rise, from the lowest point to the highest, of above 100 per cent. in all these places, except England; whilst in England the fluctuation between the extreme points of price is less than 75 per cent.

I now come to the only practical objection which the honourable mover urged against the corn-law, viz., that it cripples our foreign trade. Whether it does this on account of a higher price of corn, necessarily inducing a higher rate of wages than can successfully compete with the lower wages of the Continent; or whether we export less to the corn-growing countries, in consequence of not importing their grain, it was not, if I remember, very clearly made out. It would almost appear a sufficient practical answer to the charge, however, that our exports have nearly doubled in the last 20 years, notwithstanding the existence of the corn-law; and for half of that period, of a much more prohibitory law than the present. I do remember, however, that the honourable member made an appeal to the landlords, with a view of shaming them into a compliance with his views, on the score of so many of the working classes being unemployed a few years ago, which would not, he assumed, have been the case had they been allowed a market for their work abroad, or had food been cheap enough to have enabled them to compete with the low-priced labour of the Continent. This taunt, I must say, is a little too bad, when it is notorious that the absence of employment, and consequent distress of the agricultural labourers, which, about 1830, drove them, in many cases, to acts of daring insubordination, and even to a wide-spread system of incendiarism—it is notorious, I say, that this distress was caused by an attempt, only partially put into execution, of the farmers, to reduce the rate of wages to a level with the reduced price of agricultural produce. So that this very low rate of price, which the honourable member seeks for, was the cause of that very dis-

tress, on account of which he has so consistently appealed for the sympathy of the landlord.

But if the honourable member thinks that the present corn-laws have diminished our foreign trade more than any former corn-law, I am prepared to answer that objection also. There is, very opportunely, in the Appendix of the Third Report of the Agricultural Committee of 1836, a return of the amount of exports from Great Britain to the corn-growing countries of the world, from 1829 to 1836, which exactly meets this case. The following is an extract:—

“An Account of the Exports of British and Irish Produce and Manufactures to the several Countries from which Corn is imported, in the years ending the 5th of January, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836.”

I will only trouble the house with the first and last years, and the two or three principal countries:

	1829.	1836.
Russia	£1,849,424..	£2,376,799
Germany	7,443,714..	8,678,679
United States, America	6,694,695..	14,198,900

This is official value; and the aggregate difference in the exports to all the countries mentioned in this return is—

	1829.	1835.
	£20,387,316.	£32,828,030.
The declared value being,	£14,787,104.	£21,997,478.

And this increase has taken place since 1828, when the present corn-law was enacted. How, then, can the present corn-law be said to have a tendency to diminish the trade of this country with the corn-growing countries?

This Return, in conjunction with one in the Appendix of the Second Agricultural Report of 1836, shows another curious fact, viz., that we have even exported the most to the corn-growing countries in those years when we have imported the least corn. Take wheat as an example. We imported the following quantities in the following years; and I will add the aggregate quantity of goods we exported to the corn-growing countries in the year:—

Years.	Qrs.	Official Value.
1829	1,364,220	£20,387,316
1830	1,701,885	20,699,022
1831	1,491,631	23,533,136
1832	325,435	26,882,959
1833	82,346	27,010,604
1834	64,653	28,855,141
1835	28,413	26,897,431
1836	No Return	32,828,030

Thus, the fact of our importing more or less corn seems to have no effect whatever on the quantity of goods we manufacture for export. The truth is, that the existence of machinery enters so much more into the comparative cost of manufactures than the price of labour, that the competition with other countries is much more a question of the facilities for machinery and artificial power, than a contest to reduce wages—I mean in those instances where foreign countries will allow our manufactures to compete with theirs. In many instances they will not. And nothing can better prove the disposition of other countries to manufacture for themselves, where they have facilities for it, than the great increase which has taken place of late years in the ex-

port of yarn. The manufacture of yarn requiring large capital and expensive machinery, they at present apply themselves to the weaving department of the manufacture. The time will come, no doubt, when they will resort to the preparation of the yarn likewise. This disposition to manufacture for themselves is singularly illustrated by the fact, that, although last year there was a great falling off in the exports of all other articles, there was a steady increase in the foreign demand for cotton yarn. I learn this from the annual return, entitled “Trade and Navigation,” this morning delivered to us. According to this, although the export of cotton manufactures had fallen from £18,511,692 in 1836 to £13,625,464 in 1837, yet the export of cotton yarn had increased from £6,120,366 in 1836 to £6,953,467 in 1837. This tendency in some countries to manufacture for themselves is, fortunately for us, counterbalanced by an increased demand from other parts of the globe; but the fact I have stated is sufficient to put us on our guard, that our main dependence ought not to rest upon our foreign trade; and to teach us, as I said, before, a prudent lesson of respect and encouragement to the home market, which will never leave us, unless the schemes of an anti-national policy shall compel it by poverty so to do, through an absence of the means to purchase. Thank God! the country is no longer deluded by that wild and chimerical cry for free trade which existed about 15 years ago, when the principal political leaders of both sides, cabinet ministers among the rest, went to school to Mr. M'Culloch, and imagined that the habits and pursuits of the population were, at once, to be surrendered to the dictum of some abstraction in political economy. Hon. members on this (the ministerial) side of the house may lament over their decrease in the number of county members, and attribute it, as long as they please, to intimidation of landlords and other causes; but the main cause is, that the farmers, as a body, believe that the Tory country gentlemen (the leaders on both sides they have equally distrusted) were less bitten with the insanity of free trade than the Whig country gentlemen; and after the feverish excitement respecting the Reform Bill had passed away, they relapsed into their previous feelings on this subject. The declaration, however, of my noble friend (Lord John Russell) at the commencement of the session, so strongly in favour of agriculture, will, I have no doubt, have a great effect in obtaining the confidence of the farmers towards his government.

I omitted to state, in passing, that the honourable mover (Mr. Villiers) had invoked the sympathy of the landlords in this house towards the working class, especially, because they had of late been very much out of employment, and he seemed to attribute this state of distress either to the corn-laws, or to the high price of corn. I thought it had been notorious to every one in the country, that the state of disemployment among the working classes, within the last twelve months, was owing to the commercial embarrassment of the last year. That embarrassment, it is equally notorious, arose from the sudden contraction of the circulating medium; a contraction necessary, no doubt, to the safety of the Bank of England, under the present standard of value. But the previous state of prosperity, arising out of an abundance of money, shows that we can have a flourishing trade in spite of the corn-laws; and proves, also, what I have always contended for, viz., that the corn-laws alone were not sufficient to restore prosperity to the distressed agriculturist.

In conclusion, Sir, three very good reasons, on one

side of the question, may be given for the repeal of the corn-laws; and I will state them shortly, and somewhat more explicitly than the honourable mover:—1. It would make the income of fixed annuitants go farther; so long as war and famine could be avoided. 2. It would lower rents. 3. It would diminish the influence of landlords at elections;—all which seem desirable objects with many of the parties who urge the repeal of the corn-laws. It is made, in fact, a political question. There are also three arguments against the repeal of the corn-laws; so long, at least, as the interest of the debt continues to be paid:—1. It would ruin the landlords.

2. It would ruin the tenants. 3. It would ruin the labourers and the country districts. But, Sir, we are in no danger of so destructive a change. The country is wiser than to submit its experience to any such chimera. Poll the whole country on the question of free trade and the corn-law, and I am confident that ten to one would be in favour of the corn-law rather than of free trade; because the one is an encouragement to native industry, the other is not: and it is because I consider the corn-law to be a protection and encouragement to British labour, British capital, and British enterprise, that I give it my best and warmest support.

ARABLE AND TURF FARMING COMPARED.

OLD TURF.	CLOVER.	BARLEY.	OLD TURF.
Rent and taxes... £ 2 10	Seed..... 1 0	One ploughing, three tines, rolling and grooping. 0 15	Rent and taxes... 1 15
Manure for one year spreading, bush harrowing, and rolling 1 10	Sowing, rolling, and harrowing, &c.. 0 5	Seed, three bushels. 0 12	Manure yearly, &c 1 10
	£1 5	Water furrowing, &c 0 1	3 5
£4 0	Rent and taxes.... 2 10		Average crop.... 4 10
Value of hay crop and lattermath.. 5 10	£3 15	Rent and taxes.. 1 15	£1 5
Profit on turf..... 1 10	Value of crop and aftermath 5 10	£3 3	LOAMY SANDS.
POTATOES—STRONG LOAMS.	Profit on hay.... £1 15	Average crop, six quarters 8 10	OLD TURF.
Four ploughings, harrowings, and rollings, at 15s.. 3 0	OATS.	Profit on barley.. £5 7	Rent and taxes.. 1 5
Two drillings.... 0 10	One ploughing, and six tines rolling, &c 1 0		Yearly manuring, &c 1 10
Twenty loads of manure at 4s.... 4 0	Seed, five bushels. 0 15		£2 15
Thirty bushels of seed, at 2s..... 3 0	£1 15		Average crop..... 3 10
£10 10	Rent and taxes... 2 10	HAY.	Profit on turf.... £0 15
Cutting, planting, and hoeing.... 0 15	£4 5	Seed, sowing, &c. 1 5	
Scuffling and two earthings..... 0 10	Av. crop, six qrs. 7 4	Rent and taxes... 1 15	TURNIPS.
£11 15	£2 19	£3 0	Four ploughings, &c., &c..... 3 0
Rent and taxes.. 2 10	Profit on potatoes. 1 15	Average crop.... 4 10	Two drillings.... 0 10
£14 5	Profit on wheat... 7 10	Profit on hay..... 1 10	Manure or bones.. 2 10
Average value of an acre of potatoes..... 16 0	Profit on clover... 1 15		Seed, sowing, hoeing, &c., and scuffling..... 0 15
Profit on potatoes 1 15	Profit on oats..... 2 19	OATS.	6 15
	(Years in course, four)..... £13 19	Seed, &c., as before..... 1 15	Rent and taxes.... 1 5
	Yearly average £3 9 9	Rent and taxes.. 1 15	8 0
	Profit on turf... 1 10 0	£3 10	Average crop..... 8 15
	Profit on arable lands over turf £1 19 9	Average crop five quarters 6 0	Profit on turnips.. 0 15
	ON GOOD TURNIP LANDS.	Profit on oats.... £2 10	
	Four ploughings, rollings, and harrowings 3 0	Profit on turnips.. 1 0	Barley.
	Two drillings.... 0 10	Profit on barley.. 5 7	As before..... 1 8
	Manure 3 0	Profit on hay..... 1 10	Rent and taxes... 1 5
	Seed and sowing.. 0 5	Profit on second years' grass.... 1 0	£2 13
	Hoeing?..... 0 5	Profit on oats.... 2 10	Average crop, 4½ quarters 6 0
	Two scufflings.... 0 5	(Years in course, five) £11 7	Profits on barley.. £3 7
	Rent and taxes... 1 15		
	£9 0	Yearly average profit.. ... £2 5 5	HAY.
	Average crop... £10 0	On turf..... 1 5 0	Seed and sowing.. 1 5
	Profit on wheat... 7 10	Profit on cultivation over turf £1 0 5	Rent and taxes.... 1 5
	Profit on turnips. £1 0		£2 10
			Average crop..... 3 15
			Profit on hay.... £1 5

Second years' grass 0 16	WHEAT.	Profit on fallow :	CLOVER.
Third do..... 0 10	Three ploughings,	Profit on wheat 0 14 0	Seed, &c., as be-
OATS.	tines and rollings 2 0	Profit on hay.. 2 5 0	fore..... 1 0
As before..... 1 15	Seed, three bushels 1 0	Profit on oats.. 1 15 0	Rent and taxes.... 0 15
Rent and taxes.... 1 5	Seed furrowing,	(Years in course	£1 15
£3 0	sowing and har-	four)..... £4 14 0	Average crop.... 3 10
Average crop, four	rowing, and	Yearly average £1 3 6	Profit on hay.... £1 15
quarters..... 4 16	grooping 0 16	Turf 0 15 0	
Profit on oats... £1 16	Lime or dung.... 3 0	Difference ... £0 8 6	OATS.
Profit on tur-	Two years' rent and	£4 14	As before..... 1 15
nips 0 15 0	taxes..... 3 0	Second years' grass 0 15	Rent and taxes... 0 15
Profit on barley 3 7 0	Average crop.... 10 10	(Years five)..... £5 9	£2 10
Profit on hay.. 1 5 0	Profit on wheat.. 0 14	£1 2	Average crop 3½
Profit second	CLOVER.	The most profitable ro-	qrs 4 4
year 0 16 0	As before..... 1 5	tation in the end.	Profit on oats.... £1 14
Profit third year 0 10 0	Rent and taxes.... 1 10	BARREN CLAYS OR	Beans 2 10
Profit on oats.. 1 16 0	£2 15	LEYS.	Crop 3 qrs..... 4 15
(Years in course	Average crop.... 5 0	WHEAT.	Profit on beans... £2 5
six) 8 9 0	Profit on hay.... £2 5	Ploughings, &c.. £2 0	Profit on Wheat.. 0 4
£1 8 2	OATS.	Lime or dung.... 3 0	Profit on hay.... 1 15
On turf..... 0 15 0	As before..... 1 15	Seed 1 0	Profit on beans.... 2 5
Difference 0 13 2	Rent and taxes.... 1 10	Seed furrowing,	(Years in course,
CLAY FALLOW.	£3 5	grooping, &c... 0 16	four) 4 4
Rent and taxes... 1 10	Average crop, four	£6 16	Yearly average .. £1 1
Manuring, &c.... 1 5	quarters 5 0	Two years' rent and	
£2 15	Profit on oats.... £1 15	taxes..... 1 10	
Average crop.... 3 10		£8 6	
Profit on turf £0 15		Crop, 3½ qrs..... 8 10	
		Profit on wheat... 0 4	

These barren clays or leys are usually joined with better soils, and the separate value is not known; in very many cases they are useful only in rotting sheep and affording a sour bite to a few young cattle, and not worth a half crown per acre. Complete draining must precede the breaking up; and it will happen that a loss will be sustained on the wheat crop, and the profit must be looked for on an average of years. The above calculations are made on a low average, and, as if all labour was hired, and the crops sold at current value on the ground, the straw being allowed for the expence of ingathering and not taken into account. Locality and circumstances will always render many allowances necessary in all such cases.

The useless and very shameful state of cultivation in which our turfs and leys are suffered to remain, cannot fail to strike the most careless observer. My own opinion is, that, except in some particular cases, leys and turfs are unprofitable, and the alternate system has long ago most fully settled this point, except with those persons whose minds are wilfully shut to reason and conviction. To avow this fact, and to say that hay is not a very necessary appendage on any farm will subject the writer to universal obloquy, and he will be assailed by the whole host of old and fixed opinions, which, like the laws of Medes and Persians, alter not. These prejudiced notions are little worth heeding—time will work conviction, though slowly—and though any one person or persons who oppose their doctrines to the prejudices of a multitude must fail, we know very well that if founded on reason they ultimately succeed.

And though such foolish notions in agriculture are sanctioned by ignorance and riveted by power, we may hope that the present intelligent generation will burst the fetters of thralldom, and sweep away the cobwebs of antique ignorance.

RUSTICUS.

Dec. 20, 1838.

THE CORN LAWS.—There is no difference whatever, I conceive, betwixt consigning the whole of our woollen trade to foreign nations, and giving them as much of our agriculture as brings from the labour, skill and capital of our people the same amount. Except, that by throwing at once the whole of any trade out of work, a greater degree of destitution and distress might happen than when a portion equally large was removed from employment, when there was still a large part left. But supposing half the people employed in the woollen, and half those in the cotton trade, were, by the transfer of those trades to foreign powers not wanted, and half the sum annually created by the industry of these trades (viz. 20 millions) lost, I can see no difference, in an economical and national point of view, betwixt that state of things, and our yielding to foreigners the opportunity of producing from their nations to the amount of 20 millions in corn for our use, which portion had been of late produced by our own people, and we finding them, into the bargain, a market for it. The destitution in either case would fall the heaviest upon the people of that trade which had been transferred, but depend upon it the loss to the other would be very severely felt. The reduction

of the amount of property annually created, partly by the employment of skill and capital, but chiefly by the labour of the people, to the amount of 20 millions, would in a few years so alter the position we now hold in the scale of nations, that if we did not find ourselves at the bottom of that scale, we should be moved many degrees downwards. It matters little I conceive, to the nation at large, whether the loss fall upon the loom or the plough.—*Baker on the Corn Laws.*

HARKAWAY.

A variety of circumstances have transpired which render this horse an object of much more than ordinary interest, particularly the dispute between his owner, Mr. Ferguson, and the Turf Club of Ireland, and to which we are in fact indebted for his visit to this country.

It would appear that Harkaway made his debut as a two-year-old on Saturday, October 22, 1836, for the Paget Stakes, at the Curragh Meeting; on which occasion, he ran second to Mr. Kelly's Talleyrand, carrying 2lb. more than his successful competitor.

At the Curragh Mulgrave Meeting, the following month, (Friday, Nov. 11) Harkaway came out for, and won the Constantine Stakes, beating three opponents. The following day, he appeared at the starting post for a sweepstakes, and did not get placed; he carried 7st. 6lb.—exactly 14lb. more than Mr. Disney's Vigo, (both two-year-olds) who proved the winner. On these two occasions, Harkaway appeared in the name of Lord Milltown; and from the weight he carried in the latter race, it is evident he was regarded at this early period of his career as a horse of a very superior description. Fourteen pounds extra on the back of a two-year-old seems enormous!

In the early part of the following year Harkaway continued to run as a two-year-old; for in Ireland, it seems, the late regulation of calculating a horse's age from Jan. 1, instead of May 1, was not adopted; and therefore at the Curragh April Meeting (Tuesday, April 25) he thus came out for the Madrid Stakes, and ran second to Mr. Osborne's Mercury; here also weight told against him, as he carried 7lb. more than the winner, both being two-year-olds. In this race he appeared in the name of Lord Milltown.

On the following Saturday he came out for "the second class of the Madrid Stakes," as Mr. Ferguson's ch. c. Harkaway, by Economist, 8st." which he won cleverly, beating four others.

On Monday, June 12, at the Curragh June Meeting of the same year (1837) he came out as a three-year-old, and in Mr. Ferguson's name, for the Kirwan Stakes, and defeated a numerous field, though carrying his full share of weight.

On the following Thursday he appeared again at the starting post for and won the "Northumberland Handicap," carrying one stone more than Cruiskeen, also a three-year-old. The next day he proved successful for the King's Plate of 100 guineas.

At the Curragh September Meeting (Wednesday, Sept. 6, 1837) he came to the starting post for the Wellington Stakes and proved successful, beating seven competitors. The next day but one Harkaway paid forfeit for the "Challenge of the Wellington Stakes."

On the 16th of the following month (Curragh October Meeting) he won the Kirwan Stakes, in the name of Lord Milltown. And the next day but one (Wednesday Oct. 18) won the "Challenge of the

Kirwan Stakes," in his Lordship's nomination: Harkaway was opposed by Mr. Stanley's Blackfoot, who came in first; but as the jockey was accused of foul riding, and proved guilty, the stewards awarded the race to Harkaway; Blackfoot, a year older than his competitor, carried one pound less.

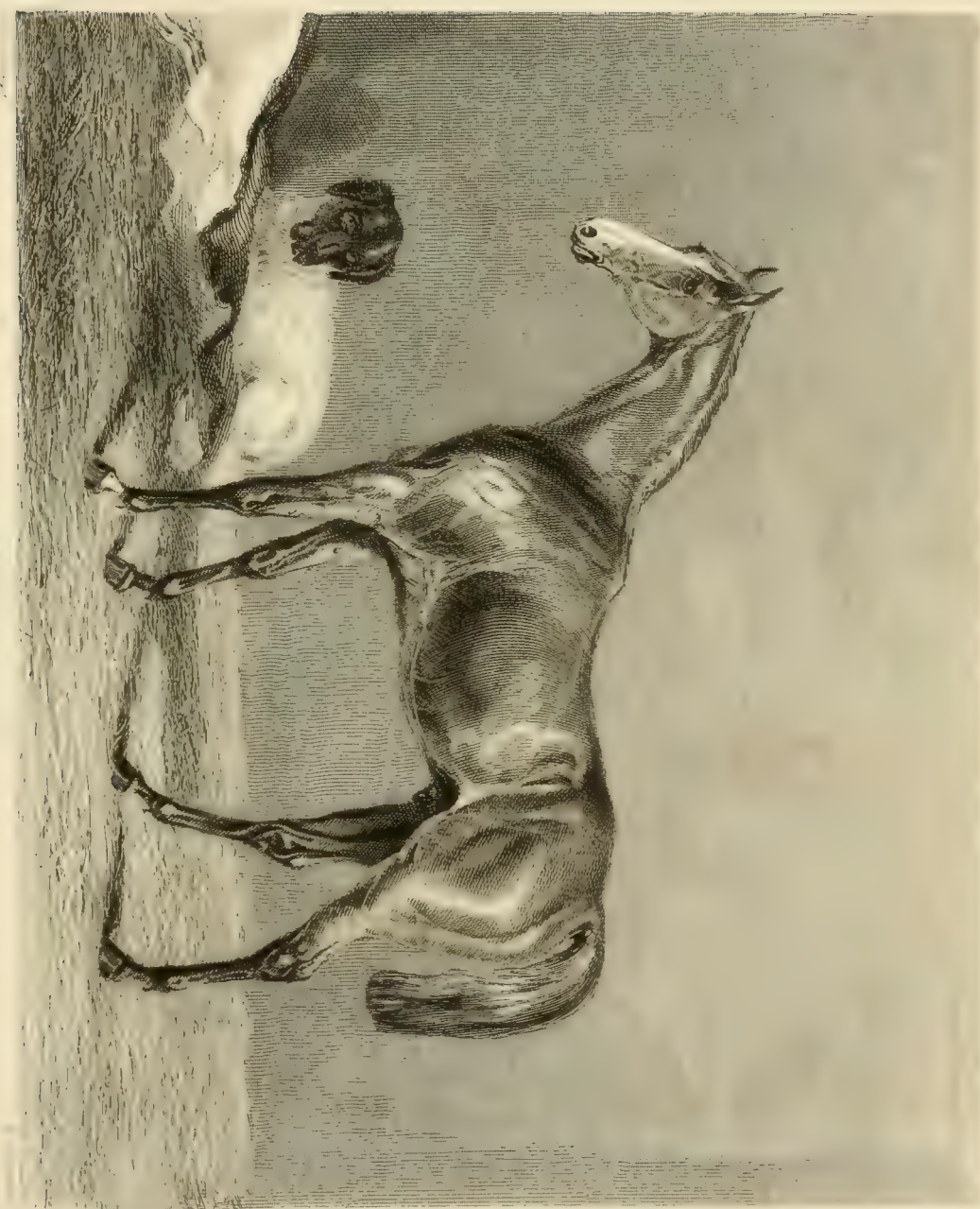
The same day, Harkaway won his Majesty's Plate of 100 guineas.

It rarely happens that a racer, and a young racer in particular, can go through half the work which has been accomplished by Harkaway. Elis, one of the best nags that ever appeared on the English turf, both as to power and speed, came out in his third year oftener than usual, repeatedly under great disadvantage in weight; but, during that period, he did not start half as often as Harkaway, nor did he race so successfully, though the extra weights he carried were not nearly so heavy as those allotted to the Irish nag. Elis "flew to pieces" after his exertions as a three-year-old; he came out only once afterwards, for a match with Slane, at the Mewmarket Craven Meeting (1837) which he contrived to win, though he carried 7lb. more than his competitor, and was tottering in the knees at the time of starting; this was the last effort of Elis on the course.

Harkaway's legs must be of the very best quality, or he could neither have carried the extra weights allotted to him, which are double, at least, the ordinary average, nor yet have come out so often. His sire, Economist, has good firm legs, or at least such was the case when he ran at Liverpool, a few years since; we never recollect handling better legs. Economist was, when we saw him, a fine large horse, with a good constitution, and evidently a good feeder; his appearance, however, impressed upon the mind of the beholder, the idea rather of a hunter than a racer, nor were his performances on the turf eminently successful.

Had Harkaway continued in the Sister Kingdom, his extraordinary capabilities as a racer would have scarcely been credited on this side the water; many would have thought his oft repeated and almost uniform success arose chiefly from his having "nothing to beat;" but from his performances in this country, and particularly from the style in which he won the Goodwood Cup, no doubt can be entertained as to his great superiority. His running at Liverpool was scarcely equal to his performance at Goodwood; but, let it be kept in mind that he had crossed the water a short time previously, and a racer can scarcely fail to suffer in a sea voyage, how short soever, be the weather what it may; yet, we are inclined to think he would have proved successful for the Liverpool Cup, had not his rider let him out a few seconds too soon; had he kept him together till within the distance, he would have rendered the struggle shorter, which on a very severe run in, like that of Liverpool, ought to be a weighty consideration, particularly under the circumstance of unusual weight; after all, Harkaway was beaten only half a neck.

Under every view of the case, Harkaway must be considered as a very remarkable horse; since he possesses not only superior speed, but unusual power also, accompanied by the rare quality of being able to appear very frequently at the starting post—in this respect he appears to excel every other horse on the turf. If Harkaway be not the very best horse in Great Britain (as he has proved himself in Ireland) there is not one of his year can race successfully against him; all preceding nags brought into this country sink into nothingness compared with Harkaway.



THE EAST LOTHIAN STUBBLE RAKE.

FIG. 1.

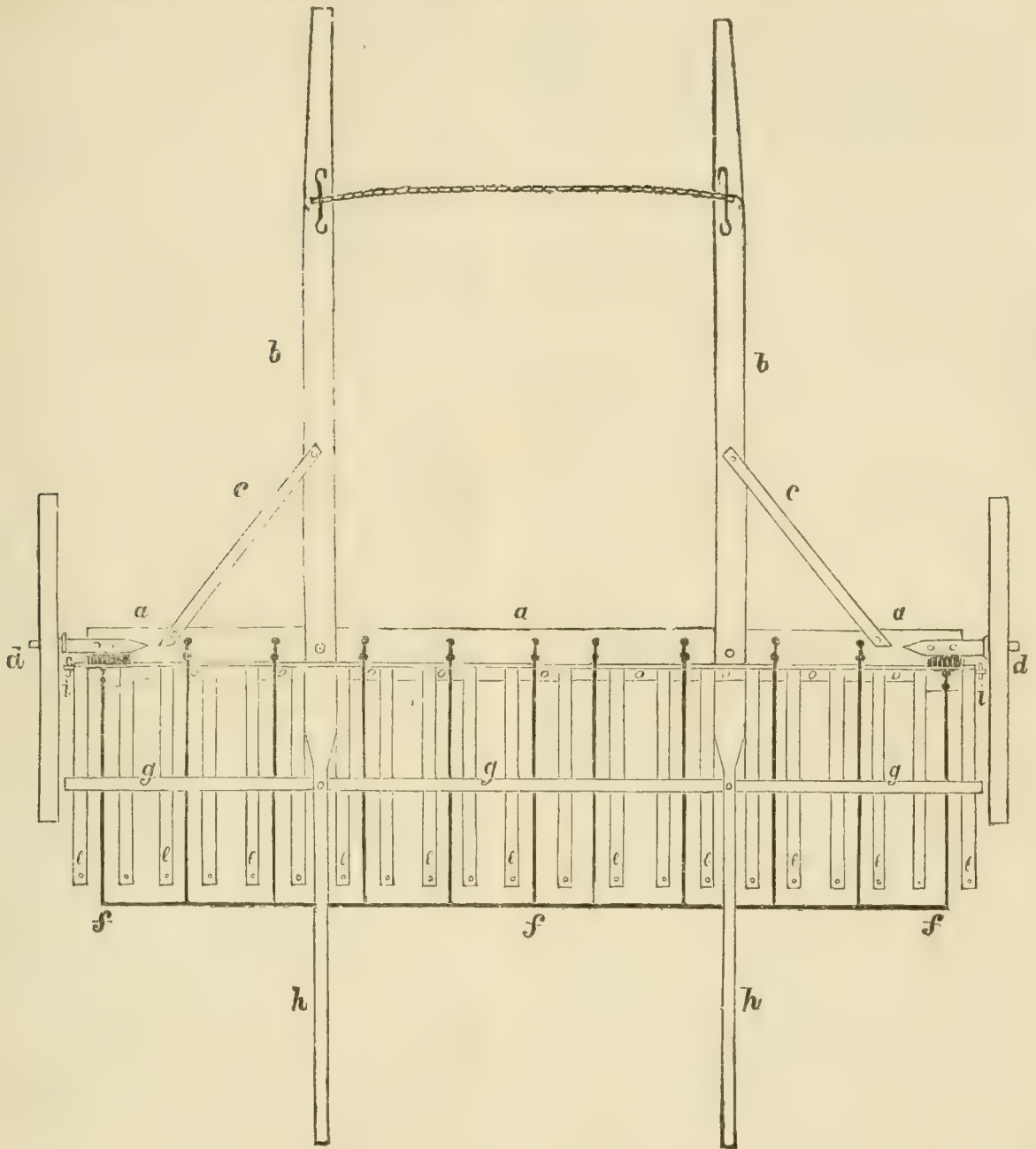


FIG. 2.

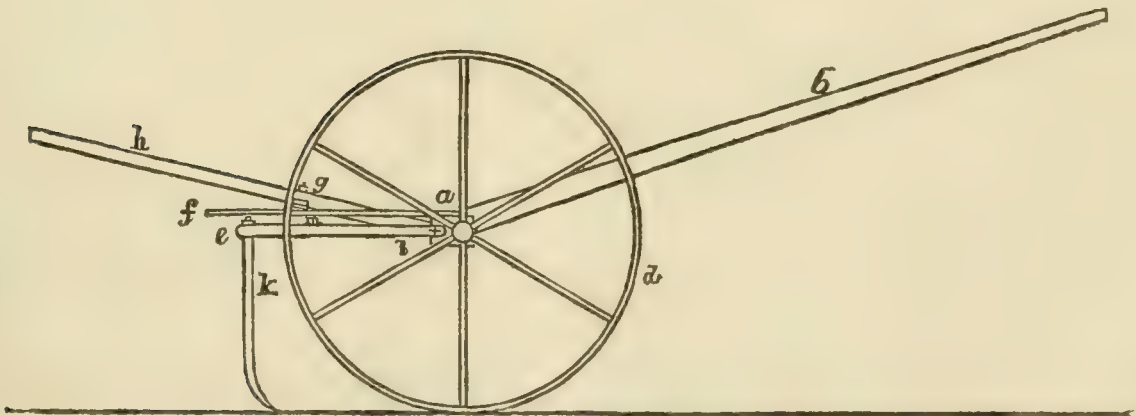
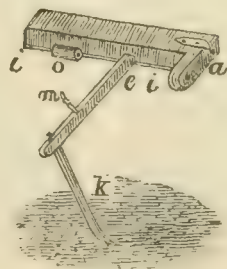


FIG. 3.



TO THE EDITOR OF THE FARMERS' MAGAZINE.

This machine, which is employed for the purpose of raking the stubble of the harvest field after it has been cleared of the stooks, has been in actual operation among the East Lothian farmers for upwards of four years. It is easy and simple in its construction, yet wonderfully effective in the performance of its work, so much so, that it is almost impossible to find a single head or ear of corn on the ground over which it has passed; it is drawn with the greatest possible ease by one horse, and is usually driven at a good pace; in East Lothian the horse may frequently be seen trotting in the most lively manner with this implement, keeping the man or the boy (it is considered so light and so easy to manage, that a boy is usually set to it) in attendance upon it, stepping out at a very smart pace. The corn and straw which it gathers, called technically "the rakings," is usually laid down in long rows at stated distances from each other across a field; this is done for the purpose of speedy removal afterwards, for of course, it is much easier to remove "the rakings" thus laid down, than if emptied irregularly over the whole extent of a field.

But to proceed to a more minute explanation of this "horse rake," (as called in East Lothian) I beg to refer the reader to the first of the engravings. It is a bird's-eye view as it is termed, in more plain words, the ground plan. *a a a* is the principal part of the frame or body of the machine, *d d* the wheels at each end of *a a a*, to which they are fastened, *b b* the shafts in which the horse is placed, *c c* iron rods secured by bolts at either end to the shafts and frame, for the purpose of keeping the machine firm and strong, *e e e e e* &c. are the wooden pieces to the end of which the iron teeth are fixed by means of nuts or screws, as represented in fig. 2 by the letters *e* and *k*; these teeth are loose and moveable on their axle *i i*, which axle, or round rod of iron runs along the whole breadth of the machine from wheel to wheel, or from *i* to *i*, (in fig. 1); on this axle or rod, all the teeth have free liberty to move, and therefore their own weight makes them fall and dip into every little hole or inequality in the ground over which they traverse, taking all before them; the teeth (marked *k* in fig. 2) are turned into a sort of curve at the point; this provision, although seemingly of no use at first sight, is designed for a two-fold purpose; first, that by being so curved the teeth do not scrape the ground, collecting stones, clods, &c., but instead of this, the bend of the teeth allows them to run on the top, or close to the ground without entering it; the second advantage is, that it allows the rake to pass freely over water-tracks, or ebb-trenches made for the conveyance of water from the land, without risk of making a forcible impediment or halt in the progress of the rake, or breaking the teeth, as would be the case if the teeth were straight. Turning again to figure first, the reader will perceive the handles for emptying the rake when full, marked by the letters *h h*; these handles also work like the teeth freely on the general axle *i i*, they serve to separate a couple of teeth in their respective places in the same manner as those round pieces of wood marked *o o* &c. likewise on the axle *i i*, which are placed there for the purpose of separation only. On reference to figure third, where a perspective view is given of a tooth *e*, and a separator *o*, on the general axle *i i* separately, it will perhaps be more clearly obvious to the reader than in the other views, and serve more distinctly to explain the action of the machine. Now to explain how the rake is emptied when full, the reader must give a glance at the

hands *h h*; it will be perceived that these hands are fixed by bolts to the long piece of wood *g g g*, which lies along the whole breadth of the machine, resting on the backs of all the teeth *e e e e* &c., the piece of wood *g g g* is also attached by means of three or four links of a chain to each of the teeth, as seen in fig. 2, where a side view shows the mode of connexion, and also in figure third, where the chain is seen and marked in both views by the letter *m*. In emptying the rake, therefore, when full, the handles have only to be lifted, which bringing the teeth up along with them through the slight iron framework *f f f*, through which the teeth can come, but not the straw or corn from which they are thus extricated, and which consequently must immediately fall, and be left behind to form part of the row before alluded to. The emptying is the work of an instant. The iron framework *f f f* in figure first is of a very slight description, for this, the simplest of all reasons, it does not require to be very strong; it is fastened to the wooden frame *a a a* by two bolts in each branch for the purpose of keeping it somewhat steady. There is an arm or small rod placed between every two teeth, as represented in fig. 1; this iron frame lies below the long piece of wood *g g g* (to which the teeth are attached) and just on a level, or nearly so, with the top of the teeth, as in fig. 2. The mode of attaching the teeth by chains to *g g g* is convenient and useful for two reasons, it allows them free action and is still a method of raising them, and it also prevents them from falling or sinking too far down into the ground, if any deep holes should intervene.

The "rakings" are always subject to be mixed with small stones, &c., gathered along with the more valuable commodity, which circumstance cannot be helped, and is no fault of the construction of the rake, which is one of the most simple and effective machines with which the agricultural mechanical world is at present acquainted. The "rakings" are generally stacked, thrashed, and winnowed by themselves in East Lothian, on account of the miscellaneous nature of their contents. They are generally thrashed twice, or put twice through the thrashing mill, because the ears or heads of the corn are so much mixed, and lying in so many different directions, that the drum of the mill has not "fair play" in thrashing them. The whole breadth of the rake is about nine feet, doing a half of a ridge at a time, (the East Lothian "rigs" being about eighteen feet broad, generally, that is to say, when not drained, in which case two "rigs" are thrown into one) the wheels are about eighteen or twenty inches in diameter, the teeth about fourteen, fifteen, or even sixteen inches long, or from *e* (in fig. 2) to the point, and from *e* to the axle *i i* about eighteen inches. The general price at which it is obtained in East Lothian, is 2*l.* 10*s.* or 3*l.*; but, I doubt much if they could be had at such a price in or near "the great metropolis," where labour is so much dearer.

I am, Sir, your most obedient servant,
JAMES AINSLIE.

THE NORTHAMPTONSHIRE SWEEP-STAKES, for green crops, have been awarded as follows:—

Mangle wurzel..... Earl Spencer.
Swedish Turnips Mr. Beasley.
Carrots Mr. Hillyard.

HEDGING.—Earl Spencer's Prize of Ten Pounds, open to labourers of any county, was contended for by twenty on Friday last. The judges' award was to No. 10, the work of James Hedges, of Helidon; No. 3, the work of William Bull, of Wormleighton, was highly commended.

REPORT OF THE PROCEEDINGS OF THE YOXFORD FARMERS' CLUB, DURING THE PAST YEAR, ENDING OCT. 28, 1838.

We, your Committee, appointed to draw up a report of the proceedings of the Yoxford Farmers' Club during the past year, have carefully perused the minutes of its several meetings; and in accordance with our instructions, have prepared the following abstract, believing it will be found to convey the spirit of the conclusion at which the meetings have arrived on most subjects which have come under discussion.

The first subject that engaged the attention of the Club, was the consideration of the Act 6th and 7th W. 4th, to regulate Parochial Assessments, with a view to the arriving at some general principles, the acting upon which should secure unity of operation, and consequent equalisation in the mode of carrying out the provisions of the act in the neighbouring parishes.

The meeting derived considerable advantage from the remarks of many who were practically interested in the subject, and unanimously arrived at the following resolution.

"It is in the opinion of this meeting desirable that parishes should, by committees selected from *their own rate-payers*, make such new assessment on the estimate of the fair annual rental value of the messuages, lands, tythes, &c., in their respective parishes, agreeably to the provisions of the act, believing that their own local knowledge would enable them to arrive at such an equitable assessment as would give general satisfaction, and thus avoid the expenses necessarily attendant upon a compulsory or public valuation."

Connected with this subject some valuable suggestions were made to remedy the inequalities of assessments to the county rate, but assuming that an equalisation of these would necessarily take place on the basis of the new parochial assessments when completed; this point was for the present left open.

We have the satisfaction of being informed that several parishes have beneficially acted upon the suggestions thrown out at the meeting.

At a subsequent meeting the subject of the comparative advantage to be derived from the use of long or short manure, engaged, at considerable length, the attention of the club; and much interesting information was elicited from many practical farmers, tending, however, to show that different results had frequently been obtained, were under an apparent similarity of practice, arising probably from diversities of soil and seasons; this being the case, no resolution was moved, but several individuals having promised to make trial of the same description of manure on various soils in the course of the ensuing season, it is with considerable interest we are anticipating the reports of these experiments, and avail ourselves of this opportunity, particularly to press this subject upon the attention of all practical agriculturists.

At the meeting in February, the subject of the advantages to be derived from the use of soot or saltpetre as a top dressing, was fully discussed, when the meeting came to the following conclusion.

"That from the remarks that have been made, and from the evidence that has been adduced, it appears that on light, mixed, or thin skinned heavy soils, these artificial manures have the effect of producing much straw, and also an increased quantity of corn; but that on deep and productive soils, and such as are naturally calculated to produce luxuriant crops, their tendency to force the early growth of the plant is prejudicial to grain crops."

The meeting in April renewed the consideration of the subject, when we had the advantage of hearing from Mr. Lewin a detailed account of the result of his practical experience in the use of saltpetre, all which tended to confirm the general principle recorded in the previous resolution.

The enquiry as to the best mode of preparing wheat for seed was another of the practical subjects that has come under the consideration of this meeting, and many interesting facts, the result of individual experience with the detail of several experiments, were offered to the meeting, and much interest was derived from the remarks of some practical chemists exhibiting the cause and effect of the proposed remedies for counteracting the tendency to smut, so generally complained of. The establishment of the following facts appears to be the result of the discussion.

"That although on some soils careful selection of the seed alone has been found sufficient to prevent smut, yet on others, (and those the generality of soils) it has been found difficult to avoid its formation on the crop, however careful may have been the selection of seed; that in these cases a remedy for the evil has been found in a preparation of the seed by immersion, either in salt brine or chamberlye of sufficient density to float an egg, or in some solution of arsenic, or vitriol, sufficiently strong to destroy the vegetative powers of the smut which may have accumulated on the outside of the seed wheat, using, in order to dry the same, lime in the proportion of half a peck to each coomb of wheat, and this practice when carefully done, was acknowledged by all who had tried it, to have had the desired effect of preventing the growing crop from the vegetation of smut upon it. It is also strongly recommended that greater attention should be paid to the selection of the best of wheat for seed, and also to the proper preparation of the soil by fine tillage, and when practicable, to secure the planting on a stale plough."

On the question of the best and most efficient mode of securing protection to agricultural property, after a very full and interesting discussion, the following resolution was unanimously carried.

"The subject of the best mode of protecting agricultural property having obtained the close attention of this meeting, and amongst the means proposed that of the establishment of a system of rural police having undergone considerable discussion, it is its opinion, that from the expense necessarily attendant on the adoption of such a system, the establishment of a rural police force, would, in this neighbourhood, be ineligible, but it is desirous to record its opinion that the object of protection may be more fully achieved by the adoption of such measures as tend to the amelioration and improvement of the social and moral condition of the labouring classes, and the following modes have been pointedly alluded to which fully meet the approval of the meeting, viz., the improved education of the rising generation, the providing them with increased facilities for intellectual improvement, increased attention to their moral and physical wants on the part of their richer neighbours, and the exertions of philanthropic associations, and it is earnestly to be hoped that these measures will be more and more zealously adopted and actively maintained."

In connexion with that subject, we have to acknowledge at our next meeting, the receipt of a written communication from Mr. Thomas Davy, one of our members, which for the interesting information it contained, the sound argument it exhibited, and above all for the benevolent sentiments which characterized it throughout, was highly valued by the meeting and ordered to be recorded with its minutes. From this we cannot forbear to quote the following concluding remarks, not doubting they will find a response in the hearts of all who are interested in the welfare of the poor around them.

After having alluded in detail to the advantageous effect produced in the welfare of the labouring class through the instrumentality of "the spread of education," the establishment of mechanics' institutions, the exertions of agricultural associations, labourer's friend, and horticultural societies, and above all, to the increased exertions of the clergy and dissenting ministers to impart moral and religious instruction, the writer proceeds to state—"That through these means great improvement has been effected in the humble walks of so-

ciety, and consequently a great diminution of crime these causes are neither retrograding nor are they stationary, but I trust progressing and daily producing beneficial results; but there is still another means which, though acted upon by some, is capable of great extension, is within the reach of all, and calculated not only to increase the social comforts and enjoyments of the poor man, but also to improve his moral condition—I mean *individual and personal exertion as directed to his benefit*. Let us then, every one of us in his individual capacity, at all times, and on all occasions, treat the poor man with such kindness, consideration, and respect as shall show him that we esteem him as a fellow countryman and a fellow Christian, by doing him all the little acts of kindness in our power (and there are many friendly aids besides pecuniary ones, that are highly prized by the poor man.) By thus endeavouring to ameliorate the privations, to soften down the hardships, and to alleviate the misfortunes incidental to the humble and laborious lot of a poor working man, we shall secure to ourselves and to our property a much more efficient safeguard than from any rural police, or from any other coercive system whatsoever. It may be said, what is the use of individual exertion? It cannot produce much good, but let it be remembered that nations are made up of individuals, and like a community of ants, who have the instinct to perceive that by every one unweariedly persisting in carrying the smallest particle of sand towards the erection of their hillock of protection, how soon (when compared with the means) a mountain is raised, so by every individual contributing his mite of personal exertion towards the amelioration and improvement of the condition of the poor, the good that will be done will be immense in the aggregate.

We trust this interesting subject will not be lost sight of, but that in our future meetings an attempt will be made to organize our exertions to promote these objects.

At the time when Mr. Shaw Lefevre's bill, for removing the difficulties attending the rating of commuted tithe, was before the House, it was decided to call a special meeting for the purpose of inquiry and information as to its bearings upon the agricultural interest.

The meeting was fully attended, but during the interval the bill had been withdrawn.

The following resolution was unanimously adopted:

“That this meeting being fully alive to the difficulties which from recent legal decisions have attended the rating of commuted tithe, and believing the bill, introduced by Mr. Shaw Lefevre, calculated to remove these difficulties, regrets to learn that it was withdrawn. The chairman and secretary are requested to keep their attention directed to the subject, and in the event of any measure being proposed to the legislature to bring it before the consideration of the meeting.”

In the course of the year considerable correspondence has been carried on with the secretaries of other societies, and one subject which occupied at some length the deliberations of the meeting was a proposition emanating from an association styled the Farmers' Central Agricultural Society, for uniting in one body the farmers of England, for the purpose of legislative protection, and requesting the opinion of this club as to the prospectus for its organization.

The meeting entertained the question and were unanimously of opinion that the proposed plan, as well as the manner in which it was proposed to be carried out, was decidedly inexpedient; a committee was appointed to prepare a full reply, stating the grounds of its objections. The report of the committee was brought to a full meeting and unanimously adopted. The concluding remarks are subjoined as expressing the sense of the meeting on the subject of agricultural protection.

“We have thought it right thus fully to express our opinions, on the ground that it is due to those who have taken upon themselves the task of endeavouring to centralize the hitherto too much separated agricultural body, that all local agricultural societies should fairly, and openly, place you in possession of their views. We again repeat our opinion, that the

establishment of a Central Society, for the legitimate protection of agricultural interests, would be highly desirable, but in order that such society should be efficient, it is necessary that it should embrace the whole agricultural body; this unity can in our opinion only be secured by such society adopting broad and liberal principles of justice for their basis, by maintaining those principles in the exercise of sound and temperate judgment, by firm yet courteous expression of its sentiments, and by a total avoidance of anything like party spirit.”

In the course of the year, several sweepstakes have been offered for the production of the best beet-root, Swedes, and common turnips. The following parties were the successful competitors.—

1st class.—Beet; Thomas Man, Darsham.

1st class.—Swedes; Robert Foulsham, Darsham.

2nd class.—Beet; John Chandler, Middleton.

2nd class.—Swedes; John Mann, Huntingfield.

Common turnip; Samuel Cross, Peasehall.

Pudding turnip; William Gurling, Peasehall.

It is due to the unsuccessful competitors to state that many of the roots shewn by them, as well as by some others who were not included in the sweepstakes, possessed much merit.

With a view to the extension of any benefit that may arise from the practical information to be derived from the discussion of agricultural questions, a resolution to the following effect was agreed to.

“That a corresponding committee be appointed to communicate, from time to time, with the Ashbocking and Harleston Clubs, or any others formed on a similar principle, and that provided they agree to the same resolution. All minutes and resolutions of the said clubs shall be open to each other, and the Secretaries shall be at full liberty to furnish them with access to the same.”

This arrangement was fully accepted by the societies above named, and we should hail with satisfaction the opportunity of extending the rule to any other similar association.

We here take the opportunity of expressing our acknowledgments to Sir C. B. Vere, to the Secretaries of other societies, and to others with whom we have had occasion to correspond, for the promptness and courtesy with which they have at all times met our communications.

Several other subjects have, from time to time, interestingly engaged the attention of the meeting, to detail which would carry us beyond the reasonable limits of a report. The following subjects are still before the meeting for discussion:

The permanent improvement of poor pastures, advantages of artificial food as a substitute for the growth of turnips on heavy land.

Advantages and disadvantages of clod burning, desirability of adding our agricultural library to this institution.

Having thus given at some length a summary of the proceedings of the society throughout the year, little more remains for us than to congratulate its members on the perfect success with which its establishment has been crowned; this is evidenced in the uniform interest which has attached to the discussion of every question, and the perfect harmony which has throughout prevailed. We trust that instruction and profit have been combined with interest in the carrying out of the discussions, and we take some encouragement from the acknowledgments of other societies, that even beyond our own members, the establishment of this club as not been without utility.

At the meeting of the 20th November, the report, as brought in by the committee, was unanimously adopted, and ordered to be printed for the use of its members, with the addition of its record of thanks to the Chairman, Secretary, and Treasurer, for the efficient assistance they have afforded the club in the management of its affairs.

(Signed.) J. G. COOPER, Chairman.

Dated 26th November.

RUTLAND AGRICULTURAL SOCIETY.

The annual show of this society, for the distribution of prizes, &c. took place at the Riding-house, Oakham, on Tuesday, Dec. 4.—These exhibitions, which, since the commencement, have gradually progressed, both in the value of stock shown and the extent of the patronage and attendance, would seem almost to have reached perfection. The show of Tuesday last, we are informed by an agriculturist, places the little county of Rutland in the situation of a respectable rival to the extensive Smithfield Christmas exhibition, and greatly outstrips the efforts of any *local* society throughout the kingdom. So much for zeal and perseverance in the cause of agriculture. We never saw the Riding-house so well stocked; and the company on the two days of exhibition was numerous, and highly respectable. The judges this year were Mr. S. Bennett, of Bickering's Park, Bedfordshire, Mr. C. Stokes, of Kingston, Nottinghamshire, and Mr. W. Bartholomew, of Goltho, Lincolnshire; and their decisions have, we understand, given perfect satisfaction.—The list of prizes awarded will be found below, in our report of the dinner; we need here merely refer to it. In addition to the stock, which excited so much and general satisfaction, there were also some very excellent specimens of seeds, roots, &c., and a collection of improved agricultural implements, forwarded at the request of the stewards, by Mr. Grant, of Stamford. The whole exhibition was of the most gratifying and satisfactory character.

THE DINNER.

At about half-past three o'clock, upwards of 150 gentlemen sat down to dinner in a temporary room erected over part of the yard of the George Inn, Lord Barham, president of the society, in the chair.

The noble lord was supported, on his right, by W. M. Noel, Esq., M.P., the Earl of Aboyne, and the Rev. C. Swann, and on his left, by H. Handley, Esq., M.P., the Hon. C. G. Noel, Stafford O'Brien, Esq., &c. The vice-chair was ably filled by G. J. Heathcote, Esq., M. P., and among the company were Gen. Johnson, M.P., Hon. Capt. Edwards, H. O'Brien, Esq., J. M. Wingfield, Esq., Dr. Doncaster, T. H. Jackson, Esq., R. W. Baker, Esq., Mr. Healy, Loughton, &c. &c.

The cloth having been removed, and grace said by the Rev. C. Swann,

The CHAIRMAN said that he understood it to be usual in meetings of this kind to make no allusions to any political subjects, and he trusted that the custom would be adhered to that day. The first toast which he would submit to them was one which must ever be uppermost in the mind of Englishmen—the Queen. (*Applause.*)

The CHAIRMAN.—“The Queen Dowager, and the rest of the Royal Family.” (*Applause.*)

The CHAIRMAN.—“Success to the Rutland Agricultural Society.” (*Loud applause.*) His lordship then called upon Mr. R. Smith, one of the secretaries, to announce the list of prizes, which he immediately proceeded to do, and the awards were made as follow:—

CLASS 1.—Oxen or Steers. 1st premium of 15 sovs. to Mr. Hodgkin, of Edenham, 4 yr. and 3 mo. old Ox, bred and fed by him on oil cake, cabbage, carrots, and hay.—2d premium of 7 sovs. to Lord Exeter, for his 4 years and 6 months old Ox, bred and fed by his lordship on linseed cake, barley meal, carrots, and hay.—Nos. 4, 6, and 9, were commended.

CLASS 2.—Oxen or Steers. 1st premium of 10 sovs. to Mr. C. Morris, of Oakham Grange, a 3 years and 10 months old Steer, bred and fed by himself.—2d premium of 5 sovs. to Mr. Baines, of Brook, near Oakham, a 4 years old Ox, bred by Mr. G. Royce.

CLASS 3.—Oxen or Steers. 1st premium of 10 sovs. to Mr. Hodgkin, of Edenham, a 3 years and 11 months old Steer, bred and fed by himself. 2d premium of 5 sovs. to Mr. C. Smith, of Burley, a 4 years and 3 months old Ox, bred by Mr. Thompson, of Tallington.

CLASS 4.—Cows or Heifers. 1st premium of 7 sovs. to Mr. Baker, of Cottesmore, a 4 years old Heifer, bred by himself. 2d premium of 3 sovs. to Sir J. Palmer, Bart., Carlton, a 4 years and six months old Heifer, bred and fed by himself. No. 3 commended.

CLASS 5.—Fattened Dairy Cows. 1st premium of 7 sovs. to Mr. J. Painter, of Burley, a 9 years and 6 months old Hereford Cow, bred by himself. 2d premium of 3 sovs. to Mr. Thos. Spencer, of Knossington, a 5 years old Cow, bred by Mr. Wm. Tutin, of Winton, Yorkshire. No. 2 commended.

CLASS 6.—To the owner, being a tenant farmer, of the best pair of Steers. 1st premium of 5 sovs. to E. W. Wilmott, Esq., of Pickwell, a pair of Steers, under 1 year and 10 months old, bred and fed by himself. 2d premium of 2 sovs. to Mr. Baker, of Cottesmore, a pair of Steers, under 1 year and 10 months old, bred and fed by himself. No. 4 commended.

CLASS 7.—Long-woolled Fat Wether Sheep. 1st premium of 7 sovs. to Mr. W. Sanday, of Holme Pierrepont, near Nottingham, three 20 months old Sheep, bred by himself. 2d premium of 3 sovs. to Lord Exeter, of Burghley Park, three 20 months old Sheep, bred by himself. This class generally commended.

CLASS 8.—Long-woolled Fat Wether Sheep. 1st premium of 7 sovs. to Mr. Painter, of Burley, three 20 months old Leicester Sheep, bred by himself. 2d premium of 3 sovs. to Mr. Burgess, of Ridlington, three under 21 months old Sheep, bred and fed by himself. No. 2 commended.

CLASS 9.—Long-woolled Fat Wether Sheep. 1st premium of 7 sovs. to Mr. Burgess, of Ridlington, three under 34 months old Sheep, bred by himself. 2d premium of 3 sovs. to Mr. Bullock, of Manton, three under 34 months old Sheep, bred and fed by himself. No. 1 commended.

CLASS 10.—Breeding Ewes. 1st prize of 5 sovs. to Lord Exeter, of Burghley, five Ewes, bred and fed by his lordship. 2d premium of 3 sovs. to Mr. Cheetham, of Hambleton, five Ewes, bred and fed by himself. No. 2 commended, and Nos. 4 and 6 highly commended.

CLASS 11.—Long-woolled Theaves. 1st premium of 4 sovs. to E. W. Wilmott, Esq., Pickwell, five Theaves, bred and fed by himself. 2d premium of 2 sovs. to Mr. Cheetham, of Hambleton, five Theaves, bred and fed by himself. This class generally commended.

CLASS 12.—Long-woolled Lambs. 1st premium of 3 sovs. to Mr. Burgess, of Ridlington, five Lambs, bred and fed by himself. 2d premium of 1 sov. to Mr. Bradshaw, of Burley, five Lambs, bred and fed by himself.

CLASS 13.—Pigs. 1st premium of 4 sovs. to Mr. W. Lamb, of Colsterworth, a 11 and a half months old Pig, bred and fed by himself. 2d premium of 2 sovs. to Sir Thomas Whichcote, a 43 weeks old Pig, bred and fed by himself. No. 3 commended, and No. 1 highly commended.

CLASS 14.—Pigs. 1st premium of 3 sovs. to Mr. Guilford, of Somerby, a 6 months old Pig, bred and fed by himself. 2d premium of 1 sov. to Mr. W. Bull, of Somerby, a 31 weeks old Pig, bred and fed by himself.

CLASS 15.—The premiums of 10 and 5 sovs. were awarded on Monday the 26th March last, to Mr. Goodwin, of Ayston, for his Stallion.

CLASS 16.—The premium of 3 sovs. was awarded on Monday the 26th March last, to Mr. Draper, of Oakham, for his Boar.

Offered by Lord Barham.

CLASS 17.—The premiums of 7 and 3 sovs. were awarded on Monday the 26th March last, to Mr. Baker, of Cottesmore, for his Bull.

Offered by the Hon. W. M. Noel.

CLASS 18.—Heifers. 1st premium of 5 sovs. to Mr. Baker, of Cottesmore, a 1 year and 5 months old Heifer, bred and fed by himself. 2d premium of 2 sovs. to Mr. Chapman, of Whitwell, a 1 year and 10 weeks old Heifer, bred and fed by himself.

Offered by the Hon. Berkley Noel.

CLASS 19.—Heifers. 1st premium of 7 sovs. to Mr. Baker, of Cottesmore, a 2 year and 1 month old Heifer, bred and fed by himself. 2d premium of 3 sovs. to Mr. Painter, of Burley, a 1 year and 7 months old Hereford Heifer, bred and fed by himself. No. 2 highly commended, and Nos. 5, 7, and 9 commended.

Offered by the Hon. Charles George Noel.

CLASS 20.—Steers. 1st premium of 7 guineas to Mr. Baker, of Cottesmore, a pair of 3 year and 1 month old

Steers, bred and fed by himself. 2d premium of 3 guineas to Mr. H. Stimson, of Oakham, a pair of 2 year and four months old Steers, bred and fed by himself.

Offered by Stafford O'Brien, Esq.

CLASS 21.—Cows. 1st premium of 5 sovs. to Mr. Cheetham, of Hambleton, a 3 year and 3 months old Heifer, bred and fed by himself. 2d premium of 2 sovs. to Mr. Baker, of Cottesmore, a Roan Cow, bred and fed by himself. No. 4 highly commended.

Offered by the late Sir Gerard Noel Noel, Bart. M.P.

CLASS 22.—Cows in milk. 1st premium of 5 sovs. to Thomas Needham, of Eggleton, a 4 year and 10 months old Cow, bred by Mr. Tirrel, of Eggleton, and fed by himself. 2d premium of 3 sovs. to William Sherwin, of Langham, a 4 year and 11 months old Cow, bred and fed by himself.

CLASS 23.—Heifers. 1st premium of 4 sovs. to Dorothy Hickson, of Langham, a 1 year and 6 months old Heifer, bred and fed by herself.

CLASS 24.—Calves. The premiums of 2 and 1 sovs. were awarded to W. H. Faulkner, for a 5 weeks and 1 day old Calf, bred and fed by himself.

CLASS 25.—Pigs. The premiums of 2 and 1 sovs. were awarded to Wm. Chamberlain, of Burley, for a Pig, bred by Mr. R. Smith, of Burley, and fed by himself.

Oats. A premium of 2 sovs. to Mr. Bradshaw, of Burley, for 4 bushels of Friesland Oats. The others generally commended.

Offered by the Rev. H. Neville.

Wheat. A premium of 2 sovs. to Mr. Wm. Ullett, of Hambleton, for 4 bushels of Wheat.

Barley. A premium of 2 sovs. to Mr. Chapman, of Whitwell, for 4 bushels of Barley.

Offered by Henry Neville, Esq.

Wheat. 1st premium of 1 sov. to John Barfield, of Ridlington, for one bushel of Wheat.—Also by Mr. Baker.—2d premium of 10s. to Wm. Wright, of Ridlington, for one bushel of Wheat.—3rd premium of five shillings to Edw. Russell, of Ridlington, for one bushel of Wheat.

Also by Mr. Baker.

Shearling Sheep. 1st premium of 2 sovs. to Mr. C. Morris, of Oakham, a slaughtered Sheep.—Also by Mr. C. Smith.—2d premium of 1 sov. to Mr. Wm. Dawson, of Birthorpe, a slaughtered Sheep.

Offered by Augustus Stafford O'Brien, Esq.

Labourers in Husbandry. 1st premium of 5 sovs. to Richard Russell, of Tickencote, 56 years of age, and has 10 children.—Offered by E. W. Wilmot, Esq.—2d premium of 3 sovs. to Robt. Manton, of Ridlington, 73 years of age, and has 8 children. 3d premium of 2 sovs. to Thos. Hemfries, of Eggleton, 45 years of age, and has 11 children. 4th premium of 1 sov. to Thomas Ward, of Edithweston, 43 years of age, and has 11 children.

Mr. Painter, a silver medal, offered by Mr. R. Smith, as breeder of his pen of sheep in class 8.

Lord Exeter, a silver medal, offered by Mr. R. Smith, as breeder of his pen of Ewes in class 10.

Offered by the Society.

A silver medal to Mr. Robert Smith, of Burley, for a pair of Cart Mares.

A gold medal, offered by the Society, to Mr. Baker, for his Ox, shown in the Extra Stock.

A gold medal, offered by the Society, to Lord Exeter, for his pen of Sheep in class 7.

Sweepstakes of 1 sov. each, for the best pair of Mares for Agriculture; Mr. R. Smith, Burley.—1 sov. each for the best fat Heifer; T. F. Johnson, Esq., Spalding.—Half-a-sov. for the best Pig; Sir Thos. Whichcote, Bart.

The Extra Stock was highly commended.

The announcement of the award was received with every mark of satisfaction.

The Rev. C. SWANN rose to propose a toast which the steward had (he said) committed to his hands, not because he was particularly able to do justice to it, but because he had had the honor of enjoying his friendship who was the subject of it longer than perhaps any man in the county—he alluded to their late lamented presi-

dent. (*Hear, hear.*) He was sure that he was not able properly to descant on the merits of that excellent man, and he dared not trust to his feelings to enlarge upon the theme. This he would say, and all would unite in confirming his assertion, that the late Sir Gerard was a truly loyal man—a truly patriotic man—a man who had the interests of the country at heart, and especially the interests of the county of Rutland. (*Hear, hear.*) He was sure that all would agree with him in adding, that one of his first desires was to promote the objects of the society, the anniversary of which they were then assembled to celebrate. Any thing further he would not venture to say, in the presence of his noble successor; but would only appeal to the feelings of the company, which must best bear testimony to that regard and affection towards the lamented Sir Gerard Noel, which he was sure would live in their hearts, as it did in his. (*Hear.*) He then called upon them to drink, in that respectful silence and solemnity due to the subject, the memory of their late deplored president.

The Earl of ABOYNE, in rising to propose a toast, regretted the small rhetorical powers which nature had given him. He was a comparative stranger to Oakham, for though he had hunted frequently in the neighbourhood, it was nearly twenty years since he was last in the town. He proposed the health of their president, (*loud applause*); although it was the first time that he had met him, he had not now first to be acquainted with his public and private virtues. He had frequently seen his lordship's name in print, as an excellent landlord. (*Cheers.*) He really thought that he should endeavour to procure a farm under him, which would enable him (Lord A.) to compete for the prizes—and, under the able tuition of Mr. Baker, he did not doubt that he would compete successfully. He gave them the health of their noble president. (*Great applause.*)

Lord BARHAM acknowledged the compliment in feeling terms, expressing his gratification at the honour the society had conferred upon him in electing him their president. He was sorry to say that he did not know so much about farming as he ought to do, and he believed that he must endeavour to follow the recommendation of his noble friend. At the same time, his lordship assured them, that he was truly alive to the merits of this society, and very desirable that the prosperity of agriculture should be promoted as a national benefit. He felt, indeed, so much interest in the subject, that the Rutland Agricultural Society would meet with the same encouragement at his hands, which it had enjoyed under the auspices of its late president. (*Applause.*) His lordship then gave "The judges, Messrs. Bennett, Stokes, and Bartholomew," and reminded the society how deeply they were indebted to the kindness of those gentlemen who attended to assist them, many from very distant parts of the country. (*Drunk with much cordiality.*)

Mr. BENNETT returned thanks for this toast, on behalf of himself and his colleagues, declaring the peculiar pleasure with which he had again witnessed the improvement of the Rutland Agricultural Society. Since he last attended it had greatly progressed, not only in the extension of its benefits, the management of its show-yards, but also in the exertions and zeal displayed by the stewards. It was frequently his task—in fact, he considered it a duty he owed his country—to attend these societies in various parts of the kingdom; but he never witnessed so much good order and regularity as had been shown at Oakham. (*Applause.*) The office which he and his colleagues had filled was an arduous and frequently an unpleasant one: it was almost impossible to give universal satisfaction, because every person is too apt to conceive that his own is the very best animal, and when they saw him alone, it was difficult to persuade them that they would not obtain the prize. There was consequently a great deal of disappointment evinced when they found they were unsuccessful, instead of successful candidates. (*Hear.*) The best way, however, of judging of the comparative merits of animals, was seeing them side by side; not cursorily, as the view must have been that day, in the crowded show-room, but to examine them quietly and coolly—to turn them up-side down, (*hear, hear*); he meant literally what he

said—up-side down, because animals will frequently deceive a casual observer, seeming to have good tops, but having nothing underneath to carry weight. (*Hear, hear.*) He assured the company that what they had done had been to the best of their judgment; and if they had erred, it had been an error of the head, not of the heart. They had, at all events fully satisfied themselves, and that he took to be always a fair criterion that they would satisfy others. (*Applause.*) A portion of the stock had scarcely appeared sufficiently meritorious to the judges, but they had not withheld the prizes on this principle—at the great Smithfield show, which might be called the institution of the world, he should deem it most infamous in a judge to award a prize where the merit was not sufficient, but in a local society, such a course would only produce a bad feeling, and put an end to encouragement in future. (*Hear, and applause.*)

G. J. HEATHCOTE, Esq., M. P., proposed "The Stewards." (*Applause.*)

Mr. BURGESS returned thanks in a neat and appropriate speech. What he and his colleagues had done, he said, in furtherance of the arrangements of the society, had afforded themselves much gratification, and they felt amply rewarded, in knowing that they had given satisfaction. This was his (Mr. B's) retiring year, he having filled the office of steward for three years. He would only assure them of the great pleasure he had experienced in associating with other gentlemen in the office, from which he now retired with feelings of the greatest satisfaction. (*Applause.*)

The CHAIRMAN—"The Secretaries of the Society."

Mr. R. SMITH acknowledged the toast on behalf of himself, and those with whom he acted as secretaries. He felt convinced, however, that the prosperous state of the society was not owing to their exertions, but to the bounty and generosity of those who contributed to its funds, and exhibited at its shows. So long as they remained in office, it would be their study to carry out the fulfilment of its duties as they had done. He took that opportunity of thanking the noble president for the use of the magnificent building in which their exhibitions had been held. He concluded by proposing the healths of the various donors to the society. (*Cheers.*)

STAFFORD O'BRIEN, Esq., returned thanks as a donor, and assured the committee, that if they were satisfied with the donations, they (the donors) had no reason to repent their gifts, nor to regret their appropriation.

The Hon C. G. NOEL proposed the health of G. J. Heathcote. That gentleman they well knew had always been one of the firmest supporters of the agricultural interests of the country, and particularly of this society—a society which was yearly increasing in utility and importance, under the auspices of so many indefatigable agriculturists. (*Applause.*)

Mr. HEATHCOTE on rising was received in a very gratifying manner. He assured them that he should ever be happy to be of use to the society in any way, and still more so, as one of its vice-presidents. There was one peculiar feature in the compliment which had just been paid to him. He believed, that it was the first time that his young friend had ever addressed them, and he took it to be a very kind compliment that he had begun by proposing his health. They did not know Mr. Noel so well as he did—when they did, they would doubtless appreciate him equally. He trusted that the virtues and good qualities of which he gave such general and early promise, would secure to him, in after life, that happiness which he deserved. (*Applause.*) He (Mr. H.) had so often spoken to them on the subject—so frequently urged the praises, of that society, in its advocacy of the great interests of agriculture to which they all belonged—that all he could say now, would be but old argument—but an old speech; but, if there was nothing else new, he would assure them that it was always a new and fresh pleasure for him to come among them, (*loud applause*) one thing more there was which was new—they had the novelty of *better times*.—He would not touch upon that subject so as to render it disagreeable to the feelings of any. (*Hear and cheers.*) He should ever continue to direct his best efforts towards the prosperity of agriculture. It had been said, that he who made two blades of grass grow where only one grew before, was a bene-

factor to the nation: he did not wish to apply any such high-flown praise to himself, but this he would say, that he trusted he might aspire to a moderate share of their praises—as a fellow-worker in that cause in which all their interests were united—prosperity to the agriculture of the country, which must ever secure the welfare of the country. He would, before he resumed his seat, propose to them the toast of "the successful candidates;" and it was no small gratification for him, to be enabled to unite with that toast the name of a gentleman of Lincolnshire, who had taken the first prize in Rutland. He would give them "Mr Hodgkin, and the successful candidates." (*Much applause.*)

Mr. HODGKIN rose to the toast; he said he felt that he was not competent to its proper acknowledgment, but he would leave it in the hands of Mr. Baker, who was another of the successful candidates. (*Applause.*)

Mr. BAKER briefly responded to the call; he expressed himself as being very happy to find that Mr. Hodgkin had done in the county of Rutland what he (Mr. B.) had done in the county of Lincoln. (*Applause.*) He trusted to meet him again at Bourn, and again at Oakham, in honest competition so long as they lived.

The CHAIRMAN then gave "The Unsuccessful Candidates." He felt that there was no class which more required the compliment, as a consolation, and a stimulus for them to appear in the lists another time.

Mr. HANDLEY in rising, begged to acquaint the company, first, that he did not do so as an *unsuccessful candidate*, and secondly, that he hoped a long time would elapse before that cap fitted. (*Hear and laughter.*) He had a duty devolved upon him of proposing a toast—the health of Mr. Heathcote and the vice-presidents of the society. In doing so, he must beg to congratulate them on the high pre-eminence which the Rutland agricultural society had attained under the care of its officers—under the patronage of the nobility of the neighbourhood—but chiefly, under the cordial co-operation of the most intelligent and enterprising yeomanry in England. He could tell the yeomanry of Lincoln and other counties, that they might well advantage themselves by taking a leaf out of the book of the enterprising little county of Rutland. (*Loud applause.*)

W. M. NOEL, M.P., briefly returned thanks: he believed, he said, that the greatest prosperity of the country was based on the plough.

The CHAIRMAN gave "the health of the Lord Lieutenant of the County," a nobleman to whom the society was much indebted, not only as a warm patron, but as a good friend to agriculture. (*Applause.*)

The hon. Mr. EDWARDS, proposed "the Members for the County." (*Drunk very cordially.*)

W. M. NOEL, M.P., in acknowledging the compliment, declared his determination of endeavouring to promote the interests of the Rutland Agricultural Society, convinced as he was, that its object was to reward merit, and its effects to stimulate zeal and industry among all classes of agriculturists.

G. J. HEATHCOTE, M.P., returned thanks on behalf of his father, who, he said, had long been known among them as a good friend, neighbour, and landlord. It was not, he felt, for him to speak his father's praises, although he might truly say, that none more desired to gain and merit the approbation of his fellow-citizens. There were different ways of patronising agriculture—Sir Gilbert had his; while they paid their attention to sheep and pigs, he bred horses—and if they had been enabled to take the first prize at Smithfield, Sir Gilbert had taken it last year at Epsom. (*Hear.*) He believed that they were all acting for the benefit of the country, and he trusted that ere long its studs would be as famous as its flocks and herds. (*Applause.*)

Mr. HEALEY, in rising to propose the next toast, highly complimented the society on the progress it had effected, and on the elevated position it held. As a proof of what perseverance had done in Rutland, they would remember, that a few years ago, the county had been considered as a *non-breeding county*—whereas, now it was agreed on all hands, that they not only produced good stock, but also knew where to find them, and how to keep them. The gentleman whose health he was about to propose to them was Mr. Baker—

(cheers)—a gentleman whose fame was known, and whose merits were acknowledged in all parts of the kingdom. (*Loud applause.*) He had met with more success in his agricultural efforts than any man now living—and yet, he was not absolutely a farmer; he was not brought up to the cart-tail; he was a man of intellect and education, and he had shown that no one could exceed him in ability as a farmer besides. Yet, the merits of Mr. Baker as a shower of prize-cattle were among the least of his merits—look at him in the discharge of his duties as an agent—look at him engaged in the improvement of his neighbourhood—and who can compete with him? He (Mr. H.) believed that good ploughing was the ground-work of farming—that it was a rule, that where the land was ploughed well, it could not be farmed ill: and Mr. Baker had originated all the good ploughing in the county of Rutland. He knew the little county well—he knew the merits of its yeomanry—the good feeling of its landlords, who would be ashamed whenever they had good crops to raise the tenants' rents,—(*hear.*)—but he had been rather nettled by a remark of Mr. Handley's. He had said, that they, the yeomanry of the county of Rutland, were the most respectable body of yeomanry he knew; now it was very curious, but Mr. Handley had told his Lincolnshire constituents at Grantham, that *they* were the most respectable body of yeomanry he knew. (*Loud and continued laughter.*) Mr. Handley might consider himself fortunate in having so small a number of his constituents present, or he would, perhaps, have been taken very severely to task. Mr. Healey said that he would abstain from any further remarks, but give them "Mr. Baker, and the ploughing at Cottesmore." (*Much applause.*)

Mr. BAKER, on rising to acknowledge the toast, said that he felt it a great compliment to have his health proposed so early in the evening. With respect to the Cottesmore meetings—their principles—and the progress which they had made—he need not then explain; he believed they had effected some good, as had also the small allotment system, a system carried on by the exertions of great men by title, and good men by character. One of these good men they had lost, yet they might hope to have that loss supplied by three or four other good men. (*Applause.*) He congratulated the society on the excellence of their present show; nothing could have brought the Rutland Agricultural Society to its present state of perfection, but that union between great men, the men of middle station, and the cordial co-operation of the poor and labouring classes. They would again take up good animals to Smithfield at Christmas, and although it was doubtful whether they brought away the gold medal, as they did last year, they would still be no unworthy competitors; his advice was—go on—go on, beaten. They meant also to have something for the Waltham show in the spring, and there they should have an opportunity of seeing some of Sir Gilbert Heathcote's horses, of which they had heard so much. He begged to take this opportunity to announce to them, that the hedge-cutting, which had been hitherto carried on on the north side of the county of Rutland, would, by the arrangements made for that purpose, be next year taken into the South; the first would take place at Belton, in February next. He was happy to be enabled to state, that Sir Gilbert Heathcote had given the sum of 10*l.*, to be disposed in prizes to those who should cut and ditch in the best manner. (*Applause.*) He (Mr. B.) received the compliment which had been paid him, as a yeoman of the county of Rutland should receive it—gratefully and thankfully, and he hoped that all the good which had been effected by his humble means, might be multiplied ten thousand times. In conclusion, Mr. Baker directed attention to the projected English Agricultural Society, and to the exertions used in its formation by Mr. Handley; he begged to be allowed to express once more his feelings of gratitude, and to propose that gentleman's health. (*This toast was received with much applause.*)

Mr. HANDLEY, M. P., rose to acknowledge the toast. If he recollected aright (he said), during the last session of parliament, a bill had been passed for the recovery of small debts at Oakham and the neighbourhood.

He owed one of these debts to Mr. Healey, (*laughter*), and for fear of having a summary process in execution against him, he would endeavour to clear it off at once, and set himself right, (*hear*). "I need not tell you (said Mr. Handley), that Mr. Healey is a great wit—and like all other great wits, he has an uncommonly short memory. For while he remembers what I said at Grantham, he appears to have forgotten part of what I said to-day. I did not institute any comparison with regard to the *respectability*—but the *enterprise*—of the yeomanry of Rutland and other counties; but Mr. Healey never loses an opportunity of exhibiting that wit which all know he has at his fingers' ends—with regard to *respectability*, the yeomanry of Rutland may be *equal*—they cannot be *superior* to the men of Lincoln. Having now escaped the terrors of the Small Debts' Court, let me thank Mr. Baker for his mention of me." Mr. H. then proceeded to refer to his connexion with the English Agricultural Society, and bade them bear in mind that all England was not cultivated alike. In one county in which he had just been visiting, for instance, although they could produce a good sailor, one who could reef a top-sail, or man a vessel well, or make a good speech, they were still most destitute of agricultural enterprise. He related an instance of what had happened to him while on a visit in Wales. He went to look over a crop of turnips, of which the proprietor was very proud—and met with a farmer, one of high repute, as the chronicle of that part of the country. He (Mr. H.) asked him whether he kept any sheep? No, was the answer, but he had *heard so much said of them that he really would try*, and he would buy one of his lambs if he (Mr. H.) did not ask too much. Oh, he should have one for a guinea. Ah, said the farmer, that's too much; and he therefore did not commence his new school of improvement (*laughter*). Mr. Handley next alluded to a discussion which had taken place at Grantham between him and his *respectable* friend Mr. Healey, with reference to the comparative merits of the wheel and swing ploughs, when they had proposed a premium for the next meeting, by which their respective merits should be tested. Since then, he had had an opportunity of trying one of a series of experiments as to the draught of ploughs of various constructions; he had had permission from the Messrs. Ransome, with their usual civility, to test their implements, and had had seven ploughs of different makes and principles in the same field, testing them by the aid of an instrument called the *Dinomometer*: all the ploughs had been set to the same gauge—a pair of horses abreast, excepting the double furrow, which had three horses abreast—furrows six inches deep, and ten inches wide—the field was a stubble field of sandy loam, partly up hill: and on the trial, the following was found to be the *mean* of four of them:—

Description of Plough.	Maker and Mark.	Weight of each. cwt. qrs. lbs.	Draught. cwt. qrs. lbs.
Rutland*, with wheels†, ...	Ransome, N. L. . .	1 3 22	2 1 21
Bedfordshire, with wheels . .	Ransome, L. L. . .	1 3 26	2 3 24
Lincolnshire, swing	White, with Ransome Irons, B. M. .	1 0 18	3 0 0
Ditto, ditto.	Ditto, ditto, L. H. .	1 1 1	3 0 11

So that the draught of the Rutland proves to be 2 qrs. less than the Bedfordshire *with wheels*, and nearly 3 qrs. less than the Lincolnshire swing plough *without wheels*. (*Hear, hear*). Another fact obtained was the comparatively trifling difference in the draught which the weight of the plough occasions, as in adding 112lbs. to the weight of the Rutland it only increased the draught 33lbs. To return to the English Agricultural Society, he trusted it had in it the seeds of great utility: there was in general too much promised, or too much expected. They were in the habit of seeing flaming advertisements of the wonderful yield of prolific wheats: this was not

* Invented by R. W. Baker

† For a print and description of this plough see the "Farmer's Magazine" for April 1835.

their plan; neither did they go to her Majesty's gardens at Kew, and sow a hot-bed of a yard or two, for the purpose of astonishing the public with the yield; no, they intended fairly to test the respective seeds, and communicate the results in a cheap form to all agriculturists. The same with respect to implements; they would introduce them into those parts where the drill was never heard of, and where the ploughs were of the rudest construction—where they say “Our grandfathers employed these implements, and we shall use no other;” a principle which would take them back to the spade and the rake, and vote all improvements to be gimcracks and useless. (*Applause*). There was one subject which should particularly induce them to co-operate with the English Agricultural Society—he alluded to the branch of which he had the honour to be chairman, for developing the medical science with regard to the treatment of sheep and pigs. (*Hear, hear.*) Every one was aware of the vast utility which has attended the establishment of the veterinary college 40 years ago, for horses, in the treatment of which noble animal, gentlemen were frequently induced to go to an expense far beyond their intrinsic worth. He did not doubt, too, that if anything had happened to the magnificent animal which had taken the first prize that day—if it had been taken ill last week, his friend Hodgkin would have sent for Sir Henry Halford and the whole college of surgeons rather than have lost him: but this was only the case with valuable animals—but for the poor pig, for instance, if anything ailed it, the only practitioner that was called in was the *butcher*. (*Hear and laughter.*) He once told a medical man, that he had managed to get a dose of castor oil through a pig, and he said, “The action was enough to establish a reputation equal to that of Esculapius!” (*Laughter.*) He would once more then congratulate them on the enterprise of the county of Rutland: he then saw before him the design for a building wherein to hold a local society about to be established in the county of Rutland (the Farmers' and Graziers' Club—similar in design with the English Agricultural Society. Their Agricultural Society had been a valuable auxiliary to the great Central Society at Smithfield—their exertions had gained them “golden opinions from all sorts of people”—they had carried the gold medal from Smithfield, and the Derby from Epsom—(*cheers*)—and the new Rutland Club might become an equally valuable auxiliary to the English Agricultural Society as this has to its brother in Smithfield. He knew of no place (not even Grantham) where they could establish such an institution with better hopes of success, and he trusted that it would meet with the encouragement which it deserved. He had only one wish, that they would be induced to extend the magic circle of 15 miles by which they were now bounded: it was not a desirable limit—and if extended would admit some who would bring *respectability*, if they brought nothing else. He for one should be happy to have his name enrolled as a member of that society, which set an example worthy of imitation of the country at large (*loud applause*.) He gave them “Success to the Rutland Farmers' and Graziers' Club.”

Mr. R. SMITH, the secretary to the club, acknowledged the toast, and gave a flattering account of its funds and prospects, together with the patronage it had hitherto received. They had now, he said, 130 members, and donations towards the building to which Mr. Handley had alluded, of 300*l.* (*applause.*) Their noble chairman had, in addition to his munificent subscription of 50*l.*, presented them with the stone for the building, and other members had gratuitously offered to transport it to the site.

W. M. NOEL, M. P. gave “The Visitors.”

Lord ABOYNE briefly responded to the toast.

Mr. NICHOLLS replied on behalf of the Bourn Society.

The CHAIRMAN gave “The Duke of Rutland and the Waltham Agricultural Association. (*Applause.*)

Gen. JOHNSON proposed “Health and prosperity to the Grantham Association.” He was aware that they could not compete, although ever so enterprising, in point of excellence with the Rutland Society—to which, in fact, there was none equal; it possessed local

advantages which others could not attain. Where would they find any place equal for the showing of cattle to the noble edifice they had visited that day? (*Cheers.*) He only hoped that the committee would also turn their attention to the after-dinner accommodations of their visitors: he had been in many warm climates, but very few of them were warmer than the room they were now in.

Mr. HANDLEY responded to the last toast, as a member of the Grantham Association; he did not quite agree with the gallant General with respect to the exclusive local advantages enjoyed by the Rutland Society—for he believed that there was no better land for cultivation than that which lay between Grantham and the Humber; though this is not generally the case in any part. Much had been said about English and Scotch farming: now he had seen some of it, and could speak to what that difference invariably was, namely, that the Scotch was the best farming and the best land, and the English was the best farming and the worst land. (*Hear, hear.*) Still, where was there any enterprise like that of the County of Rutland? General Johnson and Mr. Healey might, if they pleased, lay their heads together, but they would find it difficult to convince him by assertion alone that any enterprise could be found equal to that evinced within the last few years in Rutland! (*Applause.*)

Mr. HEALEY, in reply, stated the difference existing between the Grantham and Rutland Societies; the former had been established only through the humble means of a ploughing match, to which had been subsequently added premiums for the reward of industry in that part of the county. No society could rival it in the latter particular—in its rewards to labourers and farming men—to servants who had lived the longest period with the same employer—to humble parents who had brought up the greatest number of children without receiving relief—to deserving widows, &c. The Rutland Society might be termed the *ornamental* society, but the Grantham was the most really *useful*. (*Hear, hear.*) He admitted the impossibility of anything like a competition between them, from the vastly extended patronage received by the Rutland Society over their's. Mr. Healey then made a few observations upon what had fallen from Mr. Handley with reference to swing and wheel ploughs, declaring his conviction that the former were much better suited to a good system of farming than the wheel ploughs. With reference to the trials made by Mr. Handley on the draughts of the respective ploughs, he was by no means sure that the experiments had been fairly tried, as much would necessarily depend on the prejudice of the man who held them. He would have been much more satisfied, also, if the experiments had been made, not with different descriptions of ploughs, but with the Rutland plough, with and without wheels.

Mr. HANDLEY.—The experiments only went to prove the draught; and with respect to trying the Rutland plough with and without wheels, Mr. Healey must (he thought) be aware, that ploughs constructed *for* wheels will never do *without* them. As for the plough, his opinion of it had always been, that it was simply a *wedge*, and in its employment, it ought, as the saying was, “to swim as stately as a swan, and as tickle as a mousetrap.” He had further had Mr. Ransome's opinion on the subject, and he was decidedly in favor of the wheel plough. (*Hear, hear.*)

The Hon. C. G. NOEL then proposed “Lord Lonsdale and Fox-hunting.”

The CHAIRMAN.—“The Magistrates of the county.” (*Cheers.*)

J. M. WINGFIELD acknowledged this toast in a pleasing and graceful speech, declaring his conviction of the great good which such societies as this effected on the moral condition of the poor, an assertion which his station on the bench well enabled him to make.

Mr. HANDLEY gave “Lady Barham.” (*Loud applause.*)

Lord BARHAM briefly acknowledged the compliment.

STAFFORD O'BRIEN, Esq., then rose to make a few observations on a subject which he had hoped would

have been alluded to before—the extraordinary rise which had taken place in corn. This occurrence ought to induce them to turn their attention to the condition of their poorer neighbours, and to raise the price of labour. Labour was the poor man's capital, and it was worth at least 10 per cent. more to him than it had been three years ago. Were they to tell the poor man, if wheat was too dear for him, he must live upon barley bread? He considered that one of the most useful branches of agricultural societies was to promote a sufficient growth of corn for their consumption. (*Hear, hear.*) In one part of the country, they were already hearing of riots and incendiary fires; and it would be only liberal in the farmers to raise the price of labour in comparison with the price of corn. Two or three years ago, he sold corn at 35s. a quarter, and for that same wheat he could now get 80s., or at all events, 40s. more than he could three years ago. Ought not the tenants, then, to pay the labourers more than they did then—especially as landlords did not raise their rents—which they ought not to do. (*Hear.*)

Mr. BENNETT said, that two sentiments had fallen from Mr. O'Brien, which did both honour to his head and heart; the first that landlords should not take advantage of the rise in corn to raise their rents; and the second, that the tenants should not take to themselves all the advantages of this rise, but let the poor labourer participate in it. But Mr. O'Brien went on rather too broad a principle. He should remember, when he compared the present high price of corn with the time when it was 35s. a quarter, that it was then paid out of the farmer's capital (*Hear, hear.*)—and at that time it was by no means uncommon for the labour account of a farmer to exceed his rent. Had those times continued, he (Mr. Bennett) did not hesitate to say, that farmer, tenant, and landlord must have been speedily involved in one common destruction; 35s. a quarter is not an adequate price for corn under any circumstances that can possibly occur; but now that it was double that, the tenant might add something to the price of labour. There was an important change in the agricultural population in consequence of the operation of the new Poor-law; in one village with which he was acquainted there were formerly sixty men upon the roads, whereas there were now not *two* able-bodied men to be found there; it had acted as a test to try pauperism in the offer of the poor-house. (*Hear, hear.*)

Mr. HEALEY stated that he agreed with Stafford O'Brien perfectly, that it was not only the duty, but the interest of the farmer to pay his labourers liberally. If they did so, the labourer would perform liberally. It was the worst possible answer which a farmer could receive who complained of the idleness of his labourer, that "You give me nought." (*Hear.*) There was an inquiry to be raised, as to what had occasioned the high price in wheat. If it was from a deterioration of the crops, it could not be beneficial to the farmer; nay, it was possible, that the higher the price of wheat the worse it might be for the farmer. (*Hear.*) But he had no doubt in his own mind, that this high price was occasioned by a deficiency in the present crop, and the old stock being exhausted. Nothing, however, could be more disgraceful to the farmer, than beating down the price of labour to the lowest ebb. (*Much applause.*)

Mr. REEVE then gave "The Noel family, root and branch."

The noble Chairman briefly responded to this toast, and shortly afterwards left the room, accompanied by Lord Aboyne and the members of his family.

The next meeting of the subscribers for fixing the day of showing, settling the bill of premiums, and transacting other business connected with the show of 1839, will be held at the Crown Inn, Oakam, on the first Monday in January in that year.

market of Lonsle Saulnier, in presence of the mayor and of several members of the Emulation Society. The prefet also was present at the first meeting. This ingenious contrivance, *easily moved*, and of a size which allows its being placed at the entrance of barns or sheds, merely keeping the smoke-pipe, or chimney, on the outside, works by means of a very simple cog-work, set in motion by a steam-engine of five horse power. The first trial gave a threshing of 73 sheaves, ordinary size, in 45 minutes, and the second 96, much larger, in 71 minutes. Two men are employed, one to feed the machine, the other to hand him the sheaves; and these two men effect in an hour and a half what ten common threshers with the flail require a day to do. The consumption of fuel was about a half-hectolitre (about three quarts) for the two operations. The invention of this machine, of incontestible utility, is due to Peter Lancy, residing at Ney, near Champagnole, assisted by Jean Baptiste Maele, of the same commune."—*Le Temps* of Nov. 19, 1838.

ON AN EXPERIMENTAL FARM, &c.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—Before I proceed to consider the subject of seeds and roots in continuation of our last letter, as contained in your paper of 12th curt., I would previously offer a few remarks, in regard to the objections which you bring forward against the practicability, and utility of an experimental farm. I am aware, though, I have more than once alluded to the want of an establishment of this nature being a desideratum to the agricultural community, that I have not fully defined the mode to be adopted, to make such an institution of general benefit, as I intended at a future period, to enter into the merits and operation of an experimental farm. But in the first place, with regard to such an establishment only being applicable for, and embracing one particular soil &c., and climate if you will, I would observe that this objection will be obviated by appointing a committee in every district, or county, who would communicate to the manager of the farm, any thing worthy of remark; and on the other hand, these committees would be instructed by the manager to try the results of seeds, and roots, &c., on the different soils and under the various climates of Great Britain, which could not be tested on the experimental farm, owing to these influences operating differently in different situations. By this means however, the whole country might be traced out, as it were, into one wide field of experiments, through the exertions of the manager and the different committees, or local agricultural associations.

I have readily allowed in my former communications, that many valuable discoveries, have from time to time been made by individual agriculturists, but it must also be admitted, that years often elapsed before these became generally known, and it only, in our opinion, requires such a centre of operation as we have pointed out to generate in the minds of both landlords and tenants, a strong and insuperable desire for further improvement. These improvements obtained, tested and carried into effect, by the manager of this experimental farm, would at once relieve the mind of the farmer from any of those doubts which frequently arise regarding the efficacy of any new scheme, and the landlords themselves deriving their information from such a respectable source, would the more readily join to assist their tenantry in the accomplishment of those improvements which had received the stamp, and approval

INTERESTING TO AGRICULTURISTS.—We find what follows in the *Sentinel du Jura* of Nov. 7:—"A threshing machine, worked by steam, was tried on the 5th and 6th of the present month, under the corn

of the manager of such an establishment, thus creating a confidence betwixt these parties regarding their ultimate success and expediency, which could not fail to prove highly beneficial to both.

Secondly,—As to the possibility of obtaining a person properly qualified to superintend the management of an experimental farm, I think there would be no great difficulty, for I believe many individuals could be found who would be both capable and willing to undertake such a charge. If we refer for instance to the general summary of the population of Great Britain, it will be found that the number of occupiers of land, employing labourers, amounts to 187,075, and those occupying land, but not employing labourers, to be 168,815. Now it may reasonably be supposed that individuals may be found from among so many, perfectly qualified for every duty, belonging, as manager, to an experimental farm, for it must not be supposed (as you would seem to infer,) that such a person must be endowed with abilities and genius superior to all his fellows. While indeed we would say that the manager of such an establishment should be a man of practical experience, strict observation, skill and enterprise, we would however leave it to his own discrimination and that of the committee of management to call in the aid of science, when required. It must also be observed that the experience of the most eminent cultivators of the soil, and breeders of stock throughout the kingdom, would be made available to the managers by means of the local agricultural associations, which it is presumed might be so organized as to act subsidiary to the principal establishment, and thereby render their co-operation for the purpose of developing and disseminating every agricultural improvement. This organization is absolutely necessary to the success of the scheme, and has indeed always formed part of our plan. The convenience and utility of such an arrangement would be found in its general applicability for speedily disseminating every agricultural improvements throughout the country, and from the unlimited encouragement that would be given to the transmission of plain statements, of the most simple facts that may occur in practice. Every facility would thus be afforded to those who might be inclined to assist in the general cause; and, the manager having no particular prepossession in favour of one theory more than another, but bound by the very nature of his situation to interpret the processes and results of nature impartially to all, by testing every doubtful statement, by comparing and classifying the whole, would be enabled to embody in his periodical reports a map of real practical information upon every subject brought under review, which could not fail to be highly pleasing, instructive, and edifying to the agricultural community. These reports would be highly instructive and comprehensive in import, inasmuch as they would contain the views of agriculturists in every county and district throughout the kingdom, with an account of the different systems as pursued by them, and these compared and tested with one another would finally be made the subject of direct experiment. “Nothing,” says Sir H. Davy, “is more wanted in agriculture than experiments in which all the circumstances are minutely and scientifically detailed, this art will then advance in proportion as it becomes exact in its methods.” The inconvenience and loss which the agricultural community have hitherto suffered from the want of an establishment of the nature referred to, will be more apparent if we consider the disadvantage which the proprietary themselves are subjected to in the management of their home farms, from hav-

ing no fixed data to assist them in their operations, nor any point of reference to guide them in the execution of any new and doubtful experiment; for it is a matter of notoriety, that the individual exertions of almost the whole of them when directed to agriculture, whether in the way of improvement or of profit, have very seldom been attended with success. Now when we reflect upon the time which they generally spend at college, and the highly finished classical education which most of them enjoy, still, with these advantages it always appears as if something more was wanting to enable them, with success, to undertake the management and discharge the duties belonging to their estates. There is no trade or profession but what requires some small preparatory practice to render the followers of it conversant with the minutiae of the different details, neither can it be presumed that the proprietary will be able properly to discharge those duties which they owe, not less to society than to their own credit and future prosperity, unless they devote some little time and attention to the science and practice of agriculture. It is, however, not by lectures that this practical knowledge is to be obtained, but by combining these with a practical field of reference, and thereby directing the attention of the student not only to the theory, but to the different processes and results as is exemplified in actual practice. Were an experimental establishment therefore in full and active operation, these results would be obtained, and the advantages would be as many and as important for the acquisition of agricultural knowledge, as a botanical garden for the acquisition of botany, or the dissection of subjects for that of anatomy. Such an institution might indeed be denominated a practical school, conducted on such an elegant and at the same time such an extensive scale, as could not fail to give to the young proprietary a relish for agricultural pursuits, and realize to the full all the expectations of a refined and enquiring mind. Every sound theory on agriculture would there be exemplified, and the young and inexperienced would learn more of the principles and minutiae of the science from the mode of procedure there adopted, than from all the hypotheses and vague generalities that have ever been penned. The study of agriculture also, as is exemplified in practice, is of so interesting a nature, that acquiring the knowledge of it would never be considered as a task by the student; for we find all those individuals who have turned their attention to it in youth, whether to the cultivation of the soil or the breeding of cattle, have invariably persevered in the same course, and in fact delight in such pursuits. We therefore take but a very partial view of the subject when we suppose that every home farm under the immediate superintendence of an enterprising proprietor, would become merely a profitable instead of a losing investment for capital. On the contrary, when we take into account the almost indefinite means which we possess of introducing and perfecting any requisite improvement, we may fairly and legitimately infer, that the home farm would not only indemnify the proprietor, but that it would take the lead in every movement which had for its object the improvement of agriculture, and would thus become a pattern for the imitation of the tenantry. The proprietor would also become so well acquainted with the difficulties wherewith his tenantry had to contend, and all the unfavourable vicissitudes by which their condition is so liable to be affected, that he could administer relief in the way and at the time which no one would know than himself how to determine.

With these explanations in reference to your ob-

jection as regards the utility of an experimental farm, I would in the meantime confine myself; but I may further observe, that to render the full benefit of those experiments available to the whole country, it may perhaps be necessary to have an institution of the nature proposed in England, another in Scotland, and a third in Ireland, with similar laws and regulations to each, so as to combine their exertions, and centre them into one grand object. Were these institutions, however, once properly organized and connected with the local agricultural associations in each country, a reciprocal interchange of views and facts relating to the different experiments instituted by the managers of each would be obtained and established, and every circumstance worthy of notice and that had the most distant reference to improvement, would be readily disseminated throughout the kingdom. An extended field of observation and experiment would thus be opened up, and a practical knowledge of the nature of those districts obtained, which may possess some inherent and natural quality in their soil or situation better adapted for the production of certain seeds and roots than that of others, and were these districts once recognized and proved to be possessed of peculiar properties suitable for maturing seeds, grain, roots, &c., then by means of these establishments, and the facility of intercourse which now prevails, rendering the inland farmer as easy of access as those on the coast, the interchange would not only be certain but performed with great dispatch throughout every district in the kingdom. In fact, the properties belonging to every soil in every district would be known, and become familiar to the managers of those institutions, and a system of exchange of seed, which experience has proved to be so advantageous to every agriculturist, would be matured and rendered so perfect as to form a new era in the annals of agricultural improvement. With reference also to what we stated in our last in regard to a frequent and direct change of seed wheat from England, we would be understood when alluding to the first year's growth always proving the best, as not referring generally, but as more particularly applicable to our finest land and earliest situations, for the laws of nature which regulate the animal economy, seem also to operate to a certain degree in the vegetable kingdom, and therefore in carrying these changes into effect caution may be necessary to guard against a too sudden transition. And when we refer to the advantage which the Scotch farmers derive from procuring their seed wheat from England, we do not mean to infer from this, that an equal and as favourable result would not be obtained by a change from other countries: on the contrary, this is only proved so far as our experience goes, and we are sanguine that similar advantages would be gained, more especially by the English farmer, from as frequent change from favourable situations on the continent.

I shall in a future letter resume my observations on seeds and roots, as to continue them in connection with these remarks might perhaps trespass too much on the space of your columns, and I may also have another opportunity of entering more at large into the merits of an experimental establishment.

A SCOTCH FARMER.

THE LATE HARVEST.

TO THE EDITOR OF THE DERBYSHIRE COURIER.

SIR,—Since harvest a general opinion has prevailed, that the product of the wheat crop will be found very

deficient, and that it will consequently be very dear during the ensuing year, not only in England but also throughout Europe; and so far have the rumours raised by interested speculators, and the agricultural journals, operated on the public mind, that the people appear to be looking forward with fearful anticipation of a general dearth. That the product of this year is considerably below the average of several last past, no one will attempt to deny, but, that we are likely to endure a real scarcity, is, I believe, as false as it would be injurious. It may not be untrue that a deficiency is to some extent perceptible, in some of the European markets, but there will, in all probability, be at least three millions of quarters imported; on nearly two millions of quarters of which the duty has been paid, and it has been brought into home consumption, chiefly in fine condition, being well suited for mixing with our new, which is mostly too damp to grind alone. Now, I think, it will not be stretching the point too far to suppose that more than a million of quarters will yet be brought into use during the year, and part if not all of it speedily, as the duty is decreasing rapidly, and taking into account the average crop of spring corn with a fair produce of potatoes, except in a few places where they have partially failed, it does appear by the most accurate calculation that I can make, founded on approved data, that we shall be able to keep the price of bread *a very great deal* below that of 1812, and ourselves at a happy distance from the starvation point. On the principle of Doctor Colquhoun's computation, allowing for the increased amount of population, it appears that, about fourteen millions of quarters of wheat are a sufficient annual supply for the United Kingdom, exclusive for what is used for seed; and calling to mind, that the annual average importation for the last five years does not, I believe, exceed 58,494 quarters, and some of that has been re-shipped for foreign countries without paying duty, so that during that period we have nearly been independent of our continental neighbours. The next thing we have to consider is the lateness of harvest, and that very little foreign wheat came into use until late in September. Hence it follows that about one month's supply for this year has been taken from the product of last, then add the supply of two months and a half to which the three millions of foreign would be more than adequate, and suppose harvest next year to come at the usual time, it is thus quite apparent that a supply for eight calendar months and a half is all that would be required from the growth of the present year. In this view of the case, it really appears to me that we shall have plenty of grain of every description, and that the average price of wheat during last week, viz., 73s. 10d. per qr., is not owing to its scarcity, but proceeds from other causes, one of which is, I think, a great deal being unfit to grind is in consequence unsaleable; and for this reason, together with the time of the farmers being taken up with their seed time engagements, our markets have hitherto been thinly supplied, but what is brought to market in good condition is in request, and commands high prices; and another cause equally important to be considered, is the practice of speculation, connivance, and trickery. It is notorious that 20,000 qrs. of British wheat was returned as being sold at very high prices in Wakefield during one week, since the beginning of harvest, which was probably more by three-fourths than would be offered for sale at this season of the year, and there is no doubt but these fictitious sales are made in times like the present, to an alarming extent, by large holders of corn for the purpose of enhancing the price, and bring down the duty on foreign corn. These are

"The frauds of law, what dark insidious men
Have cumbrous added, to perplex the truth
And lengthen simple justice into trade."

If, Sir, you consider these few remarks calculated to throw a ray of light on this abstruse subject, and tend to allay the fears of the fearful, their early insertion will oblige,

Your most obedient Servant,

J. U.

Barlboro', Nov. 24.

ON THE NATURAL HISTORY OF THE TURNIP FLEA BEETLE,

(*Haltica nemorum*.)

ITS ECONOMY, GENERATION, AND HABITS;
WITH REVIEWS OF THE METHODS ADOPTED
FOR ITS EXTERMINATION, OR THE PREVEN-
TION OF ITS ATTACKS.

BY MATTHEW M. MILBURN.

“A full history of noxious insects hurtful in the field, garden, and house, suggesting all the known and likely means of destroying them, would be allowed by the public to be a most useful and important work. What knowledge there is of this sort lies scattered, and wants to be collected; great improvements would soon follow of course. A knowledge of the properties, economy, propagation, in short, of the life and conversation of these animals, is a necessary step to lead us to some method of preventing their depredations.”—*Brown's notes to White's Selborne*, p. 115.

The name “turnip fly” is one which is applied to several insects which feed upon the turnip, in different stages of its growth, all of which are different in their nature and habits; and thus writers on the insects injurious to agriculture are apt to be misunderstood. The present essay, let it be distinctly understood, refers exclusively to the small jumping beetles which prey upon the turnip in the very early stages of its growth, and while its seed-leaves remain. Yet these insects are in almost every part of the country, and in every work on agriculture denominated the “fly.” It is time, however, that a different nomenclature should be adopted; whatever name be given to it, it certainly cannot with any degree of propriety be designated a *fly*. Beetles are an order of insects to which that name is never attached, and we never understand a beetle by that appellation. In some counties, it is called by the vulgar but significant name of “hop,” and this at once furnishes us with a less homely but not less appropriate term for the insect, namely the “*turnip flea*,” which is at once sufficiently descriptive of the habits of the beetle to furnish the practical man with a distinct idea of the insect to which he alludes, instead of the present vague mode of applying the same term to several orders and genera of insects.

The *aphis*, or plant louse, is often termed the fly, and the term is much more appropriate than applying it to the above-mentioned insect, though not free from objection. In proof of this, an instance occurred, which inasmuch as it is connected with the name of a person standing high in practical science, deserves to be quoted. The late Rev. H. Berry was applied to to state any information he had acquired respecting the “*turnip fly*.” In answer, he describes a piece of land once covered with brushwood, &c., and which he cleared and planted with hops and cabbages, and “when the latter were a foot high they became covered, and ultimately destroyed by myriads of *turnip flies*, which literally blackened the leaves. Having consumed the cabbages they *attacked and destroyed the hops*.” This certainly could not be the beetle, which constitutes the subject of this article, as it never *feeds on hops*, and never devours the cabbage in the way described by the rev. gentleman; they must have been aphides, which are

most destructive to both; but as more of these appear wingless than in the form of flies, they cannot be called the turnip fly.

In many cases the perfect insect of the black caterpillar is termed the turnip fly. This Professor Rennie says, is an improper name, but in the same place runs into the error of calling the jumping beetle a “fly.” The writer of this is greatly mistaken if it does not ultimately turn out that the name is to be reserved for one of the *muscidae* or blow flies, the larvæ of which are in some cases so destructive to the turnips when they have acquired a size deserving the name of turnip. These observations are necessary for clearing the subject. Of the turnip flea we proceed to treat. It generally makes its appearance wherever there is food on which it can subsist; it devours indiscriminately all kinds of cruciferous plants, during their seed-leaf state; and, thus eating them at a period when they have only just commenced their functions, and are the least able to resist such devouring attacks. Often the seed germinates in a speedy and healthy manner, and appears for some days in a favourable state; soon a few fleas make their appearance, and then constantly increase, devouring the leaves until sometimes nothing but the stalk remains, and of course the plant dies. The fleas, however, are ready if a second sowing occurs, and commence their ravages on the second crop when in the same state as the former. If the young plants survive the attack, the fleas still continue to feed upon it so long as the weather will permit them to be abroad, but then do comparatively little injury to the plants at this stage. Usually they first make their appearance in the months of May or June, but they are occasionally seen even earlier than this on uncommonly fine days, and certainly continue in the beetle state through the whole year; but, whether they are the same individuals, or a succession of the species, it is in our present degree of knowledge impossible to ascertain. If open weather occurs very early in the Spring, and before the Swedes are sown, they attack the charlock, or cabbage, or brocoli, when in their seed leaves, but as soon as white turnips make their appearance, they leave every other kind in preference for them. In hot weather they do the greatest injury, inasmuch as they are stimulated to greater activity, and, if we may use the term, manifest a greater degree of animation, and the plants are less able to resist the destruction of their foliage when exposed to the withering effects of a hot sun, as well as deprived of moisture by its searching beams. Cold weather, after the plants have made their appearance, is likewise unfavourable, because although the fleas are neither so numerous nor so active, still the turnip makes little progress, and it is exposed to their attacks for a much more protracted period. Heavy rains are also unfavourable, for they prevent the growth of the turnip, but do no injury to the fleas, for they escape to places of security, having that astonishing and unaccountable instinct which impels them to escape to their quarters on the approach of rain. In short, anything which impedes the growth of the plants renders their destruction more certain; while any thing unfavourable in soil, climate, or cultivation, which impedes their progress, increases the probabilities of their being destroyed. This must ever be kept in mind by the farmer, and after all, this will be found the keystone of successful turnip cultivation. This is, however, anticipating the subsequent division of this article. In Scot-

land the fleas are seldom observed, and for a series of years have done no perceptible injury to the turnip crop in that country.

The insect belongs to the ORDER *Coleoptera* (or horn-cased insects, from the wings, when at rest, being folded under a horny case); FAMILY, *Chrysomelida* (or golden beetles), and is the *Haltica nemorum* of Illiger. We shall proceed to describe its peculiarities entomologically, sufficiently brief to satisfy the mere practical farmer; but, some scientific description is necessary to denote to the naturalist the precise insect to which we refer. Samouelle enumerates not fewer than thirty-eight species, but all feeding on some cruciferous plant. The flea is from a line and a quarter to a line and a half, or nearly one-eighth of an inch in length: it is smooth and shining; the under parts of the body of a brassy black, with a slight tinge of green when viewed in some directions. The wing cases (*elytræ*) are black, with two whitish or straw coloured longitudinal lines, extending from the thorax to the extremity at which place they are curved inwards; the wing cases are wider than the thorax. The antennæ, except the second and third joints, and the end of the first of a pale colour; the thorax thickly and irregularly punctured; the legs paler than the under side of the body—occasionally they are found entirely black, which are another variety, but their character and habits are similar. The first described, however, are the most prevailing and destructive, and every farmer will instantly identify the insect from the above description. See Duncan.

The first peculiarity in the habits of the flea, is its *jumping*, for which it is strikingly adapted by the conformation of its legs. When feeding or settling upon a plant, it remains motionless, except a rapid vibrating motion of the antennæ; but as soon as any object approaches, it jumps, by rapidly unbending the hind legs and pressing them against the leaf on which it stands, and thus propels itself to a considerable distance, and generally contrives to fall upon its back, and lays as if dead for some minutes—its under parts being less distinct than the striped *elytra*. If not further disturbed, the legs speedily begin to move, and it recovers its upright condition, and again jumps to the plant. This however, is merely the way of escaping from its enemies, but in moving from field to field, or migrating to considerable distances, it uses its wings, which are seldom observed.

Its mouth is peculiarly adapted to consume the tender cotyledon leaves of the plants upon which it feeds: first, it gnaws them into innumerable holes, and ultimately consumes the whole of the leaves, and leaves nothing but the stem, which if it effects, there is little probability of the plant having sufficient vital energy to overcome, and it must be destroyed. That the fleas exist, and are found in their perfect state in every period of the year, there can be no doubt. Mr. Henderson states, that during winter he has examined trees, both in woods and standing singly, and in both situations succeeded in discovering them in a dormant state, especially on such trees as have rough bark, in the interstices of which they lodge, and on exposure to warmth soon become active. He states that he caught as many as twelve specimens from one horse chesnut tree, situated in an exposed situation, during the month of January. Other instances are on record of their being discovered in winter in "immense numbers" in a state of torpidity. To these we are not disposed to attach considerable weight, for farmers are not generally

the best observers of nature; but, there can be no doubt, that the country is never entirely free from the fleas in their perfect state, as let the turnips be sown at any period of the year, the fleas are certain to make their appearance, and simultaneously with the bursting of the seed leaves; this is a fact which has perhaps done more to baffle the scientific enquiries of the naturalist than any other fact, and given rise to various theories of their generation, at variance both with analogy and facts.

Its food, we have stated, is exclusively confined to plants of the order crucifera, and though we have observed it in fields growing corn and clover, we could never satisfactorily detect it eating them at all. It is supplied with food, doubtless by the charlock, which is found growing in nearly all situations, and at every period of the year, which admits of that hardy vegetable seed germinating. We have seen the charlock chattered by the fleas at very early periods of the spring—the beginning of May.

The method by which the insect is propagated has been a subject of conjecture for a number of years, and ever since its attacks were observed, various theories have been started, but all which have been destroyed by subsequent observation. The Doncaster Agricultural Association sent queries to one hundred and two correspondents, which were embodied in a report published in 1834, and one query was, "Have you ever made any observations as to the mode in which the turnip fly (*flea*) is generated? State what these observations have led to." To this query only thirteen correspondents replied, and even from them, some of the first agriculturists and naturalists of the day, nothing beyond theory and conjecture was elicited. On this subject the report they published states, "It is, however, very remarkable that no entomologist has detected the insect in any other than the perfect one of fly or beetle. If the transformations take place, which by analogy we are fully warranted to expect, they are so carried on as hitherto to have escaped detection. This part of our inquiry is by far the most important, and, important as it is, cannot in the present state of information be fully answered." Who will say after these striking remarks, and no less striking than true, that the practical farmer has nothing to do with the natural history and economy of the insects? Such subjects of inquiry, happily, are every day becoming more popular.

The different theories of their generation will now require review and investigation, and that inquiry will be found not only deeply interesting, but practically useful, for all our plans for the prevention of the ravages of the insect, or its subsequent destruction, must after all, be brought to the test of the natural history of the insect itself, and in passing we shall see that a thorough knowledge of its real character is essential to success in our plans for effecting its extermination.

One plausible theory is, that it is the atmospheric production of certain unfavourable seasons. This is just the thing for a class of persons ready to take everything for granted, especially if it tends to excuse their own besotted indolence—for it is quite in vain to attempt any cure for myriads of foes, created by a frosty temperature, an eastern wind, or a sultry atmosphere, and nursed and cradled in our vital air, and fed on the sparkling dew-drops. Fortunately this view is known by observers of nature to be strange both to philoso-

phy and fact, as well as derogatory to the providence of an Omnipotent being; for if a host of beautifully organised insects could be created by peculiar states of the atmosphere, other fortuitous circumstances might also create the other orders of animated nature, up to the "lords of the creation." We are aware that the book of immutable truth and unerring wisdom, in describing the Egyptian locust-plague says, that "the Lord brought an East wind upon the land all that day, and all that night, and when it was morning the East wind brought the locusts."* And at first sight this example seems to imply a possibility of insect pests originating in peculiar atmospheric agency. When it is remembered, however, that the above described visitation was *altogether miraculous*, and therefore out of the common course of nature, the whole face of the scripture authority vanishes, besides it is not said that the east wind *created* the events, but merely acted as an agent in their migration, and the wind had certainly no more to do in producing them, than the "stretching forth of Moses' rod" had;—the one case is equally forcible as the other. Whatever method of generation they may have, they are certainly not propagated by any kind of weather, though it is not denied that some seasons may facilitate the depositing of the female's eggs, or tend to render their attacks more vigorous and active; but as Professor Rennie observes, "it is as absurd" to say they are produced by the weather, "as to say that the wind could bring a flock of cattle, or that the blight could generate a flight of sparrows, or rooks, without eggs to hatch them from."

Another attempt at establishing a system of generation was made by Mr. Hett, a surgeon, of Lincoln, who contended that the insect was produced from a maggot, hybernated in foreign bones, brought to this country for manure. He says he observed them in abundance with a microscope, both in the grub and chrysalis state in the bones, and especially such as were porous and vascular, and contended that the existence of the flies (*fleas*) in places where no bones had been used was no evidence against his views, as they might be conveyed by the wind to a great distance. That bones have not only fostered, but even introduced new species of insects, there can be no doubt, but one very material link in Mr. Hett's chain of evidence is wanting. He has never established from observation, that these grubs he discovered, ever changed to the turnip flea; and they may as likely belong to any other species, as to the insect described. It is, however, quite impossible that they could have been introduced by foreign bones, for they have been a pest to the turnip crop long before any bones were imported, and even before they were thought of as a manure. It is, also, rather improbable that the larva of an herbivorous insect, should feed upon the annual matter contained in the bones. Others have started similar opinions; Mr. D. Hillocks stated he "thought it was bred in the dung" but any mere supposition quite unsupported by facts, do not deserve attention; canvassing these, is raising ghosts for the purpose of laying them. A theory, once very popular, was started by Mr. Sutton of Salisbury, who held the opinion that the flea sprung into its perfect state from eggs deposited in the earth, and that it became vivified by exposure to the sun, by the working of the land. No attempt has, however, been made either by Mr. Sutton, or his numerous partisans (for his

views have made not a few converts) to show that they had ever witnessed the transformation of the insect, or observed it to emerge from the egg to the perfect state, and therefore it is the plausibility and rationality of the view alone which recommends it to our attention, and of course any other hypothesis which accounts for the appearance of the insects in the manner in which they present themselves, is equally credible. The practical entomologist will, however, instantly tell Mr. Sutton that his supposition is alien to all matter of fact, and that no insect has yet been discovered which does not pass through the egg, (*ovæ*) grub, (*larvæ*) adolescent, (*pupa*) and perfect (*imago*) states, any other supposition is an outrage upon natural history. Doubtless these opinions have had their origin from the circumstance that as naturalists up to Mr. Sutton's time, had failed to detect the flea in its grub state, and therefore the readiest supposition—and the uncontradicted one—was that it was a monster in creation, and never existed in the grub state at all. Mr. S. doubtless founded his views also upon a plan which had been occasionally effectual in preventing the attack of the enemies, and to which we shall afterwards have occasion to advert, but as experience has subsequently shown it to be inefficacious, all evidence derived from it, of course, falls to the ground.

But the most probable, straightforward, and seemingly well-supported hypothesis was started by a writer in the *Entomological Magazine* in 1833, signed "Rusticus," and professing to be written from Godalming, in which he states a series of experiments made by himself, and which seem quite conclusive. A wonderful discovery was conceived to be made, and though unsupported by the authority of the writer's name, it created no small sensation, and was copied into nearly every periodical of the day at all embracing natural history, or agriculture. From the writer's description of the insect, it is evident he was an observer and knew what he was about, and meant the same insect which forms the subject of this article. Having thus cleared the way, we shall proceed to detail his experiments nearly in his own words, and then apply them to the test of science and experience. He first sowed some turnip seed, in a flower pot, in earth out of his garden, and fleas in abundance appeared on his plants. Next, he inclosed a pot with pasteboard and canvass, and the same result followed; but fancying that the minute insect might find its way by some crevice to the plants, he made a light frame, covered it with silk gauze, and carefully stopped every crevice through which the intruders might enter; still, however, the fleas appeared, but he considered he had established the fact, that they did not come from the surrounding plants. He then proceeded and baked the earth, and watered the seed with boiled water, to prevent the possibility of the insect's introduction in either of these niches in any state, using the previous precaution, and allowing the plants to remain until they had attained a considerable size, and on taking off the cover he found them all alive with beetle (fleas). This he concluded was a second negative evidence; at any rate he had upset Mr. Sutton. He proceeds to examine the seed with a magnifier, and discovered upon it numbers of white flattish substances, from two to five on a single seed, and these he concluded were the eggs of the insect. He then proceeds to attack these—states he steeped the seed in brine for three hours, and no fleas appeared, and has subsequently

* Exodus, 10th chap., 23rd verse.

used the same plan with cabbage, and other cruciform seeds with unfailing success. There is something in this very attractive, and Dr. Pearson of Birmingham entertained the opinion that the white specks on the turnip seed were the eggs of the turnip flea, but the question recurred to him how were the eggs, provided they were such, deposited there? as the turnip seed is inclosed in a pod, and consequently unapproachable by the parent insect, and as it is quite unprovided with any instrument to make way for the introduction of its eggs, it was quite impossible for the specks to be the eggs of the insect. "Rusticus" cannot get over this, by any possible means, and thus this little and seemingly unimportant fact at once destroys the fabric he had so ingeniously raised. Subsequent experiment has failed to establish his doctrines, and the strong probability is, that by some means or other the fleas had obtained ingress to his garden pot; but be that as it may, they could not be produced from eggs deposited on the seed by the parent insect. Dr. Pearson states, "I have since been compelled to abandon this opinion, having had no flies (fleas) when the seed was sown in soil contained in pots covered with bell glasses." A more secure method by the way than that of Rusticus, for preventing the ingress of the turnip fleas.

We now come to the developement of the true method of their generation and transformations, as furnished by the discoveries of Henry Le Keux, Esq., which is unworthy of being made public, as elucidating a question so long a subject of mystery. The existence of the larvæ was for a long series of years a point involved in considerable intricacy. Mr. Duncan, in an article published in the Quarterly Journal of Agriculture, speaks of the larvæ feeding on the leaves of the turnip plant, but neither describes the larvæ, nor states anything respecting their habits, and hence it is probable that that intelligent naturalist had made the statement either from analogy, and a very probable analogy too; or that the inference had been made by some previous naturalist. Le Keux, on examining a turnip leaf placed against the light through a magnifier, perceived a larvæ, between the upper and lower surfaces of the leaf, which turned out to belong to the turnip flea beetle, (*Haltica nemorum*) and subsequently on removing the soil from the plant, discovered more larvæ, besides some in the pupa state. This induced him to make further experiments, by enclosing ten pairs of the perfect insects in a glass tube, in which he placed a turnip leaf, supplied with water to keep it alive, so that he was able to examine the insects, and watch their operations, without disturbing them. On the following day he discovered five smooth, oval-shaped eggs, (*ovæ*) attached to the under side of the turnip leaf, and of a light green colour. He had previously attempted to breed the beetles, and had actually confined them and kept them alive for seven months, without success, but he had only supplied them with fresh leaves as the old ones withered, and this he conceived had been fatal to the eggs, or the larvæ when hatched; he therefore placed the leaf in water, and placed fresh ones beside it when it began to wither. He supplied the beetles with a second turnip leaf, and on the following day three more eggs were similarly placed upon the second leaf. In ten days the eggs hatched, and the larvæ made its appearance, and immediately commenced eating its way into the interior of the leaf, between the upper and under skin, forming a burrow in the inside of the leaf, which is of course extremely minute, and cannot be perceived until the

leaf becomes dry. This secret and secluded creation of the larvæ is sufficient to account for its being so long unobserved, for it is necessarily imperceptible to the unassisted eye. In sixteen days, the larvæ gnaws its way out of its secure and plentiful seclusion, and drops to the earth, making its way into it to the depth of about one and a half inch, immediately below the plant, and consequently near the root; the leaves acting as shelter. Thus admitting the plant to be three days above ground before the insect deposits its eggs upon it, it will be a month before the larvæ leave it, and therefore the plant will be in no danger from the perfect insects which issue from this wood. Mr. Le Keux states his belief, that it continues about fourteen days more in the pupa or chrysalis state, before it emerges as a perfect insect, but of this fact he has not quite made himself sufficiently certain. Thus far his interesting observations are satisfactory, but the question arises from whence do the fleas come which attack the plants sown after they make their appearance, since it cannot arise from insects bred in the plants themselves.

We have before shown that even considerable numbers conceal themselves in a dormant state through the winter, and as soon as genial weather arouses them from their slumbers, there is a sufficiency of charlock, and other cruciferous plants to furnish them with a nidus, and these emerge in the form of beetles, just in time to meet the *Suedes* and *yellow Aberdeen* turnips, which are generally, by good farmers, sown in May. The eggs deposited on them again, after going through the ordinary changes (occupying between five and six weeks,) are just in time to meet the fresh and attractive *white Norfolk* turnips, sown usually from the 21st to the 30th of June. Thus if the race of charlock and other cruciferous weeds could be extirpated, there can be no question that it would tend more than any other means, to lessen the virulence of the attacks of the beetle in question; and it is not until the base management which admits of weeds luxuriating where something profitable should be growing is exterminated, that we can hope for better success in combating this dreadful enemy to the turnip crop.

The very circumstance of the continual attacks which are every year more or less experienced by every farmer, might induce the idea that numerous remedies would be devised for preserving the plants from its attacks, and the recommendations are so numerous, as to bewilder rather than assist the farmer. Many are more or less useful, but more are the results of impudent quackery, and tend only by their practical inutility to disgust the experimentalist, with every plan however natural. It becomes therefore a very necessary part of an article on the natural history of the insect, intended for the reading of farmers, to revise these, and collect evidence as far as practicable of their effects. It may however be borne in mind that every plan recommended which has not upon subsequent trial succeeded is not to be altogether condemned. Partial success may attend a plan devised, owing to peculiar circumstances, which may not be calculated upon, and if these fortuitously happen in more cases than one, an anxiety to benefit others, may induce the experimentalist to give the result of his trials to the public, but if upon further trial they fail, he is neither to be blamed nor his plans altogether discarded. In similar circumstances it may be equally successful, while in different circumstances it may be inefficacious.

One class of remedies consists in hastening the germination of the seed. As the saccharine matter which is evolved during the germination of the seed, seems particularly attractive to the insects,

and as it commences its attacks a short time after the plant makes its appearance, but can do no injury after the rough leaves of the plume are developed, it appears reasonable that if the process of germination could be accelerated the attacks might possibly be rendered less destructive. With this view Sir Humphrey Davy made the following experiment. "I steeped radish seeds for twelve hours in a solution of chlorine, and similar seeds in very diluted nitric acid, in very diluted sulphuric acid, in weak solution of oxysulphate of iron, and some in common water. The seeds in solutions of chlorine and oxysulphate of iron threw out the germ in ten days; those in nitric acid in five, and those in water in seven days." He found however, that this premature vigour was succeeded by subsequent sickliness and weakness, and was convinced that the plan was practically ineffectual. Similar too is the recommendation of very early sowing. It is not every farmer who can have his land in readiness at a very early period, and we have invariably found it to be the case, that the early sown ones suffered most, as they attracted fleas from a considerable distance, in the absence of other equally attractive food; and if sown very early, they are often retarded by the season impeding their growth, and thus allowing them to remain exposed to the fleas' attacks for a much longer period.

Some farmers recommend late sowing, alledging that as the beetles decrease in activity in the month of July, there is a stronger probability of the crop escaping, if the sowing is deferred until that period. It must however be taken into account, that the crop even at that period, in a year when the fleas are very numerous is not quite free from them, and it will be a question with the farmer, whether he will sow at the usual time and run the risk of a re-sowing, or defer the operation, until he has a certain prospect of his crop being considerably lighter. In most cases it will doubtless be to his advantage to adopt the former course, in case the soil be ready for the reception of the seed, and the season at all genial, *i. e.*, plenty of warmth and moisture, two conditions necessary to the healthy development of the young plants.

Another class of remedies is those which are intended either to destroy the perfect beetle, render the plant distasteful or obnoxious to it, or by steeping of the seed before sowing it, attempting to give the plant an unpleasant flavour to the flea. Mr. Hett, whose hypothesis is alluded to, when treating of the propagation of the insects, on the supposition that they are generated in the imported bones for manure, recommends sulphur vivum being mixed with the bones to destroy the larvæ. As we disprove his positions above, of course his remedy falls with his theory, and whatever usefulness to the crop, or to other root insects the nostrum might have, so far as the turnip flea beetle is concerned it will not have greater efficacy than mixing the sulphur with the seed; a plan to which we shall have occasion presently to advert.

A mixture of sulphur and lime, which is found destructive to slugs, which attack both corn and turnip crops, was tried on a large scale by the Duke of Bedford, at the suggestion of Sir H. Davy, at Woburn farm. It was sown on one part of a turnip field, the other part being left without it; the result however was, that both parts were equally attacked by the beetle.

The application of lime in its caustic state, as soon as the enemies commence their attacks has been recommended and adopted with some degree of success. Mr. W. Long says, "I have sown riddled lime at the rate of six to eight bushels per acre, over

a drilled crop, and eight to ten over broadcast. I have never failed to prevent the ravages of the fly (flea) by this method of liming. My time for sowing the lime, is as soon as sufficient plants for the crop are up." The testimony in favour of lime however is far from being unvarying, but many eminent agriculturists have used it with frequent success. M. S. Perkins who used it in a very *hot state*, immediately after its being slacked, states that both the perfect insect and larvæ are so completely "burnt, suffocated, or debilitated, that before they can recover themselves, the young turnip plants will be sure to be in rough leaf." Some prefer sowing the lime when the dew is upon the plants, by which means it adheres to the leaves, but care must be taken not to sow too much, or it will increase the evil, by damaging the plant. It should however be remembered that as the lime will not come in contact with the under side of the plants, the fleas will find their way to such parts, and though they may be less observed, will no less certainly continue so to consume them, rather than starve; for it is quite certain that the lime will not destroy the insect, in its beetle state, and as for the larvæ and pupa, it can never touch them. Several practical farmers have recorded their experiments, which go to prove that lime, so far from being infallible has repeatedly been tried and has been ineffectual. As however the plan is comparatively inexpensive, and has *occasionally* been found useful, it is worth a trial, in seasons when the beetle proffers to be numerous.

Other trials have been made of lime combined with soot and urine, and there can be little doubt that if such compositions could be made to cover the plants completely, they would put them to no little inconvenience, and even render them less voracious. Mr. J. A. Knight made a successful experiment by drilling the above composition along with the seed. "Whether," he says, "it was by affording highly stimulating food to the plant, or giving some flavour which the fleas do not like, I cannot tell, but in the year 1811 the adjoining rows were eaten away and those to which the composition was applied, were scarcely at all touched. One advantage seems to be the acceleration given to the growth of the plants, by the highly stimulative effects of the food they instantly receive, as soon as their growth commences, and long before their radicles reach the dung." It may also be remarked that an effluvia somewhat unpleasant to the insect, may also arise, and therefore where it has the choice of other plants not so tainted, it may attack them in preference, but might not so reject them, if all were done alike. Frequently the composition has been sown upon the plants, and sometimes with success, but more experiments are requisite before it can be invariably recommended.

The steeping of the seed in train oil has been recommended, and is said to have prevented the attack of the flea at Lord Orford's in Norfolk, for three seasons, but they added to this precaution that of steeping it a whole night in brine. Seven gallons of oil was sufficient for seed to sow two hundred acres.* The drying of the seed afterwards however, is no slight matter, and it is almost impossible to effect this sufficiently to fit it for the drill. We have however known it answer, but it might not be equally effectual, as was observed of the above-mentioned composition, if it were generally used. Oil, by the way, is generally very loathsome to insects, especially in their perfect state, but how far the plant when germinated, may acquire an oily flavour, merely by steeping the seed, is a question which requires

* Ann. Agric. vol. 14, p. 168.

more observation before it can be satisfactorily answered. Sometimes brimstone is mixed with the seed for some time before sowing, for the same purpose as the application of the oil, and is an old plan; we have witnessed however its utter inutility. The elder tree is well known to grow leaves disliked by insects generally, and hence not a few recommendations have been made, of drawing hurdles made of the green boughs of this shrub over the plants. The extreme improbability of their leaving any offensive aroma upon the plants by such an operation, is sufficiently objectionable to induce the practical man to reject the plan; and any supposed efficacy in dashing the insects from the plants, is too grossly regardless of their habits, either to need refutation or remark. Ashes have been frequently used as a top dressing. Mr. G. Cant of Ickwell, has saved his crop by the sowing of wood ashes, and Mr. Fowler of Jarnerton says, that the flea will not attack them so long as the wood ashes remain upon them. In America, ashes or gypsum are mixed with the seed, and thus they act to quicken vegetation, and grow the plant out of the way of the beetle; and as everything valuable in the use of ashes doubtless is in their quickening the growth of the plant, this may be effected by any method calculated for the purpose in the adaptation of manure, &c. A mixture of sawdust and urine as well as an almost endless list of similar nostrums have been applied; but hitherto it may be ventured that chemistry has not furnished us with a specific remedy. If any application to the seed could be available nothing is so probable as a decoction of bitter almonds, which in addition to being more readily imbibed, and likely to leave its flavour, is very offensive to almost every kind of insect. Before any steep is extensively tried it should be applied to samples of the seed, by way of test; lest it should prevent the seed from germinating. "Rusticus," whose opinions are before alluded to, declared a steep of salt brine to be successful in destroying the eggs, which he fancied adhered to the seed, but as no such eggs in reality exist there, its efficacy could not depend upon that. Imagining that brine might still be useful, I steeped several pounds of seed last year (1838), and sowed some in the same field unsteeped, but could not detect the slightest difference in the attacks of the fleas. All we can say of "Rusticus" is that he *must have been* mistaken, and unfortunately he is not the first person who has adopted a wrong theory, or come too hastily to a decision. The agitation of the question however did incalculable good.

The next class of remedies which are proposed, consists of annoying, scattering or destroying the fleas by means of fumigation. The editor of the "Farmer's Journal" recommends the use of brimstone for this purpose. Lest we should not correctly state his plan, we give it verbatim:—"Let the farmer carefully watch his turnips as they come up, and whenever the fly (flea*) makes its appearance, or rather when its ravages become visible on the rising root, (plant) let him take a *certain quantity* of brimstone according to the extent of ground infested by the insect, about two and a half or three pounds to an acre; let this be put into a kettle and melted in the turnip field, in a situation most eligible for the *wind to carry the fumes over the ground*; then take any combustible matter calculated to make a considerable smoke, which being dipped in the liquid brimstone *must be strewed all over the field* in a state

of ignition, and so close together, that the fumes of the burning matter may completely cover every part of the field." Sinclair recommends the burning of stubble, straw, furze, dried weeds, heath, wood, shavings, or any other sort of cheap inflammable matter;" this however is before the turnips are sown, and he says it is "an infallible mode of preventing the ravages of the fly (flea) in turnips, for they are either destroyed by the fire and smoke, or driven out of the field." *Code of Agric.* p. 443. High an authority as Sir J. Sinclair is, we cannot see how this can at all affect the attacks of the flea, seeing that how much soever they may be dispersed before the sowing of the turnips, they will soon recover their station when food attracts them, and we seldom see them in any considerable numbers before the turnips are sown. With respect to the brimstone fumigation above extracted, we mention it only to warn the farmer against such quackery. The wind will not nine times in ten, carry the fumes sufficiently near the earth to affect the fleas, and no farmer would be sufficiently fool-hardy to scatter the burning liquid "so close together, that the fumes may cover every part of the field," who had any value for his crop.

The next train of remedies to which we shall allude, respect the ordering of the seed. It has been suggested and very rationally that if we could sow any other seed to germinate simultaneously with the turnips, which was more attractive to the fleas than the turnips, the crop might be saved. For this end the sowing of radish between the rows of turnips, in order to attract the fleas, has been adopted; but as the fleas feed indiscriminately on both, the plan has failed. The Ceres' Gold Medal of the Society of Arts, was awarded to Mr. Poppy, an observing and intelligent agriculturist, for an experiment, on the sowing of the common white turnips and Swedes, in alternate rows. The flea was attracted by the former, which were thickly sown in rows between each row of Swedes; and the result was that the former were literally covered with the beetle, while the latter were comparatively free from them. When the Swedes were in rough leaf, the white turnips were ploughed up,* and the former were a good crop. This is extremely valuable, for though it applies only to the saving of Swedes, and leaves us without a remedy for the common kinds, the securing of them is a great desideratum. Of the accuracy of the experiment, there can be no question, and Mr. Poppy deserves the thanks of the agriculturists, for his enlightened observations. We may remark that the thick sowing of the decoy turnips, for so we may not inappropriately term them, is no further useful than inasmuch as they provide plenty of food for the insects, until the Swedes are out of their reach, for thick sowing is calculated to save the crop; and Lord Leicester sows a large quantity of seed, with a view to prevent the ravages of the flea, and always succeeds with his crops. He sows three pounds per acre. It has been stated that the flea prefers the white top to the red top variety; and Mr. Townend of Elberthorpe, had two fields adjoining each other, of these two species, and the former were destroyed, while the latter were uninjured. Much reliance however cannot be placed on this circumstance, for we have known a day's difference in the time of sowing, save a crop, so capricious are their visitations.

It is doubtless an excellent plan to sow plenty of seed, so that if part of them be destroyed, sufficient may be left for a crop; and when thickly sown they

* Once for all we may observe, we adopt the nomenclature we before determined upon, for reasons there stated, in transcribing.

* This is extremely valuable, as the destruction of these plants will destroy the larvæ.

tend to draw one another up, and thus more rapidly get out of danger of the flea, and they are easily afterwards thinned by the hoe. It is stated in the Forfarshire Report, p. 363, that Mr. Johnstone, of Hill House, near Edinburgh, thins or pricks out his turnips, as soon as they appear above ground; and they are sure to be in rough leaf the next day! There must be some mistake here, for the thinning can have little effect in so wonderfully exciting vegetation in the roots, as to stimulate them into rough leaf one night after "they appear above ground:" loosening the earth is no doubt useful, but it may be equally effected by running a hoe between the ridges. Donaldson (*Mod. Agric.*, vol. ii., p. 313,) advises the sowing of seed of two different years' growth; the steeping one-half of both kinds in water for 24 hours, in order to induce it to germinate at four different periods; and thus if one crop be taken, he contends the other will escape. No turnip seed, by the way, can be steeped 24 hours, or you will not have seed to sow, but turnips; and if the seed should so germinate as he describes, the fleas could not have a better provision of fresh food, after they destroyed each successive crop, and that too without the trouble of migration! Mr. Balydon practices watering the plants in dry seasons, and occasionally saves his crops. This can be useful *only* in dry seasons, by promoting the vigour of the plants, for the watering will neither destroy nor injure the insects. We fear it savours too much of "whim," as the mill-horse farmers term it, ever to be generally adopted, and thousands would risk the crop sooner than have the trouble: with what wisdom we shall not stop to determine.

The last head of propositions for ridding the farmer of this pest we shall briefly review, under the head of mechanical operations—a class to which we are sorry to say has partaken of its share of empiricism. First, we allude to rolling the land, as recommended by some authorities, to which no small deference has been paid. Sinclair says, "To destroy the flea it has been recommended to roll the land at midnight, while the dew is on the ground, by means of which these insects may be crushed against the moist earth." We are at a loss to determine why it is to be rolled at midnight, seeing the fleas are abroad sufficient during the day time, and more so as their small bodies would not be at all injured, much less the insects destroyed, by the passing of a roller over them. But how crushing them against the *moist earth*, rather than the hard and dry is to be recommended, is a paradox which we may in vain endeavour to solve! If rolling be at all calculated to facilitate the growth of the plants, it may be so far useful, and this we very much doubt; but it cannot have the remotest influence in destroying the beetles. Another plan is, to draw a rope smeared with tar above the infested plants, by two persons walking in the furrows, and its advocates allege that the fleas jumping up from the plants as it passes over them, are securely caught by the tar, from which they cannot escape. Possibly this may be destructive to many—it may even ensnare thousands, but what are they among so many? He would be an enthusiast indeed who could even contemplate destroying numbers sufficient to save a crop, if it were in danger of being destroyed. Some improve (?) upon the rope, and substitute a tarred board, which they draw across the land, with the same object as the rope. A glance at the habits of the insect will shew the futility of this. It may be remembered we stated, when treating of the habits of the flea, that it skipped from the plant *as soon as it was approached*, and did not wait to be *touched*, or even closely inspected,

before it sprung to the earth. No better device than the board could be conceived to scare the fleas from the turnips, but we are much mistaken if any considerable number could be sacrificed.

A machine has been invented, but was never used to any extent, much upon the principle of the foregoing. A board placed in an oblique direction, and extending in length across half the lands, was fixed upon a pair of wheels, the forepart of the board being elevated two feet above the ground, the back nearly touching it, and the under side being smeared with white paint. This was pushed (for if it were drawn all the fleas would be flat upon the earth before it passed over them), and this entangled several in jumping to escape from it, the paint either fastening them to the board, or suffocating, or poisoning them by the mixture; the paint being renewed as occasion served. We doubt not this might destroy numbers if judiciously worked, but it requires several practical tests before we should place any thing like implicit confidence in saving an infected crop by such a machine.

The outline of a new expedient was given in *The Mark Lane Express* of Nov. 19, to destroy the *turnip fly*. Confused as the present nomenclature of the insects obnoxious to the agriculturist are, we are not quite clear which insect the inventor means, whether the saw-fly of the black caterpillar, or the one which forms the subject of this article. From the proposal he makes of destroying the insect in its *chrysalis* state, we infer he means the turnip flea, for the black caterpillar does no further injury to the crop after it has betaken to its *chrysalis* state. Assuming therefore that this is the insect he means, we would just make a few remarks on the proposal, for we know nothing of the machine, nor do we wish to prejudge its merits, nor injure the inventor, to which so important an Agricultural Paper, with its usual liberality, has introduced. He proposes to provide by certain means, for a jet of steam to pass between the rows of turnips, and thus destroy the fleas which have dropped to the ground, as well as their progeny in its *chrysalis* state. Let it be remembered that this is to be effected during the tenderest part of the existence of the plants, and if the steam should come near them, or the hot boiler pass over them closely, they must be immediately destroyed, and thus the cure will be worse than the disease. If it be replied that the steam will not come near the plant, say within three or four inches, we say that such fleas as drop near, or under the plants, will therefore escape, and thus the object of the machine be defeated; as to destroying the insects in the *chrysalis* state this is quite out of the question, for they lie buried at a depth of from one to one-and-a-half inches, and therefore are in no danger from the effects even of steam! We repeat, we do not wish to prejudge the value of the implement and hope it may be tried, but we shall not admit its efficacy until experience has proved it.

We repeat that no specific has yet been discovered for preventing the ravages of the flea. The subject may be somewhat cleared by the previous remarks, and it is open for experiment and investigation, and it is to be hoped attention will more than ever be attracted to a subject involving so much importance. With respect to Swedes, Mr. Poppy's plan above detailed is exceedingly valuable, and until a more certain plan is discovered, let attention be paid to the following particulars, and generally the crop may be saved.

1. Hasten the germination of the seed by all natural means, as applying some portion of stimulating manure, sowing when a proper degree of moisture

exists, and in close connexion with the manure, to secure it at once the benefit of it to the roots, if possible making most of the season when favourable.

2. Sow a liberal quantity of seed, never less than three pounds, and sow it in drills, which will hasten the vegetation after it has come up.

3. Clear the land perfectly, that no weeds may spring up to impede the growth of the plants, and give the soil a liberal supply of manure suited to its character.

4. As a preventive, rid the soil by hand weeding, horse hoeing, &c. as much as possible of weeds.

5. Select good seed, and test it before sowing, to see how many germinate, and in how little time.

Thorpefield, near Thirsk, Yorkshire, Dec. 3.

PLOUGHING MATCHES.

TO THE EDITOR OF THE EXETER FLYING-POST.

SIR,—It being now an admitted fact that ploughing matches and agricultural shows tend not only to the increase of human food, but also to improve the moral condition of the labouring classes, and thereby promoting the national welfare, I have, therefore, intruded myself before the public, in hopes that my suggestions may tend to the improvement of a part, at least, of the county. Mr. Fulford at the late agricultural dinner stated that it was seldom that any cattle were sent from his part of the county to the agricultural show; and as far as I can judge there never will be much sent from the neighbourhood of Dartmoor, to compete with Exminster, Crediton, Sandford, and such like fertile parishes. The obvious way of benefitting a poor country like this, is to form a district society at Moretonhampstead, where seven or eight parishes might unite together for the purpose above named; where poor soils might compete with each other on an equality; and though the soil is poor and sterile, and it is hopeless to expect sheep of seventy pounds per quarter; yet some as good mutton as any in the kingdom is here produced. It is well known that sheep of from fourteen to thirty lbs. per quarter can be reared here, and that is what commands the best price in the market; our pigs are known to be of good quality, and perhaps may be improved and brought to greater perfection. The first step towards improvement in our neighbourhood, I think, should be in ploughing, it being at present almost as bad as can be. The ploughmen troubling themselves little about the manner in which it is done, provided the piece is gone over; a most reprehensible practice, which I hope we shall soon get rid of, and our ploughing be performed in at least a decent manner. I am emboldened to write this, from the knowing that the principal landowners of the neighbourhood are in favour of such societies,—my Lord Devon and Mr. Fulford taking part in such meetings; and the Rev. Mr. Gregory has tried it on his own manor, but which, from some cause or other, was dropped again. I am convinced that if a few gentlemen would take the matter up the yeomanry of the neighbourhood would join them; and there would be no lack of funds for the purpose. One thing I would wish to impress upon their minds, which is, that in Scotland where the very best farmers are, it is poor land like our own, but improved to the highest degree; therefore we should not despond, but strive to get forward; and I think a little money spent by landowners would be amply repaid in the improvement that would be produced by it. By inserting this you will much oblige

A MORETON FARMER.

Moretonhampstead, Nov. 23.

ANCIENT WAGES AND PRICES IN SUFFOLK.

It has often been a question of deep consideration with statist, and writers upon the science of political economy, whether the English agricultural labourer, and working artisan, are remunerated in modern times in the same ratio in which they were paid by our forefathers. In order to place the question upon less debatable ground than it appears at present, with regard to our own locality, we intend giving a series of extracts from various sources, of the wages paid to farming servants, carpenters, masons, plumbers, &c., at different times, for labour performed in the county of Suffolk.

The first extract has reference to sums paid between the year 1528 and 1538, by Sir Thomas Kytson, for labour performed in the erection of his splendid mansion—Hengrave Hall. The wages are those earned by workmen of the first class, as the mansion of Sir Thomas Kytson, was of magnificent proportions—"finished cunningly, both within and without," and the gateway has been spoken of by one of the first Antiquaries of our own age—Mr. Gough—as being of such singular beauty, that perhaps a more elegant specimen of the architecture of the time in which it was erected cannot be seen.

Extracts from a book of disbursements containing fifteen successive and annual accounts, the first of which accounts is entitled, "Costys laid owte and paide by the handes of Thoms. Shethe, for the reparationns and bylding of the manour of Hengrave belonging unto Thomas Kytson, Mercer of London, Ao. Dni. 1525."

Itm, paide John Whitehand j days claying	iiijd.
Itm, paide to Escape the sawer, and his fellow, for iiij days	iijs.
Itm, paide to John Linge, mason, and his son, for v days apiece ..	vs.
Itm, paide to John Haddenham for sarving the mason for ij days, at iiijd. the day	viijd.
Itm, pd. for casting of vij loads of sand	vijd.
1526.	
Itm, paide to Davy, the carvar, for a dayes worcke	vjd.
Itm, paide to Dyriche, the ioyner, and Bartholomew his svaunt, for xvj dayes, at viijd. the day apiece	xxjs. iiijd.
Itm, paide for Dyrich's borde and his man, for ij weeks	vjs.
Itm, paide to Rowland the ioyner, for ij dayes worcke of the portall in the parlar	xxjd.
Itm, pd. more to him for xxjlb of iron for plor. window and great chamber	xxvijs. ix d.
Itm, pd. to gret Richard, the mortar maker for v dayes	xxd.
Itm pd. to William Hill of Ickworth, for xxm. of brick at iijs. viijd. the m. with carriage	iijs. iiijd.
Itm, pd. for xxij chaulder of lyme, at iijs. vd. the chaulder	xljs.
Itm, paide to William Rambellow, the xth day of May, for both his toberells, a daye	xviij d.
Itm, payde to the vycher of Cavenham for cxijlb. wayght of leyde	vs.
Itm, paide at Thetforde for jc. of leyde	iijs. iiij d.
1527.	
Itm, paide to John Adams for vj dayes thatching	iis. iijd.
1528.	
Itm, paide to Walter Fletcher in	

partie payment for casting of a
dytche of L pole long..... xls.
Itm, pd. to John Newman for
planching of the stabyll, iij
chambers and the windows.... liijs. iiijd.
Itm, paide to Roberte Wright for
xvij foote of glasse..... vs. viijd.
Itm, paide for carriage of vxx
and viij load of tymbar, from
Denham woode..... vjli. — vjd.
Itm, paide to the painter, for iij
days xvijd.

1529.

Itm, pd. to Jno. Chapman for a
night's watch ijd.
Itm, pd. for making and setting of
ij dytches iijli. xijs. iiijd.
Itm, paid to John Metcalfe, for
making of the stove in the vyne-
yarde, and for the bording of
vj men for a weeke xvijs. ijd.

1531.

Itm, paid for bording Robert Wat-
son iij weeks at Comby, when he
went to superintend the gret fell
of woode for the manor place .. viijs. viijd.

1535.

Itm, pd. to Wm. Daye for making
iij payer of bryck molds. xijd.
Itm, pd. to him for sealyng the
greate chamber which is iijxx xij
yardes, at vjd xxxvjs. vjd.
Itm, paid for a lb. of glue ijd.
Itm, pd. for carriage of xiiij lodes
of woode from Comby to the
frame..... xiiijjs.
Itm, pd. to Wm. Frysbe for xl tonne
of stone at ijs. the tonne, pd. by
Robert Watson iijli.
Itm, pd. for mayking mortr for ye
littel kichen vjs. viijd.
Itm, pd. for carriage of xxij lodes
of stone from ye quarry to the wa-
ter side, at xiiijd..... xxvjs. viijd.
Itm, pd. to Ihone Shingell for car-
riage xx tonne of stone from the
water side to Woorlington, at
xiiijd..... xxiijs. iiijd.
Itm, pd. for carriage of xxviiij lodes
of stone from Woorlington to
Hengrave..... xxxiiijjs. vjd.
Itm, paid to Thomas Shethe for
bordying of workmen, from My-
chaelmas 1535 untill Mychaelmas
in Ao 1536, as apperyth by his
book of yt yere jc. iijli. xiijs.

1536.

Pd. for xxxv lode of stone carriage
from ye quarry to the water side
Paide to Willm. Tomlyne for hew-
ing of xl lodes of tymber xxxiijs. iiijd.
Itm, pd. for lj lode of stone car-
riage from King's Clyffe to
Gowarde, at xvd. the lode..... iijli. vs. vjd.
Paide to Robert Bayly for xx tonne
stone caryadge from Gowarde to
Brandon xvijs. vjd.
Pd. to Goodman Bede, of Forn-
ham, for iij loade carriage of free-
stone from Brandon to Hengrave.
Itm, paid to Roger Tom, freemason,
xv days work, at iijd. per day .. vs.
Paid to Stevyng Browne for xv
thousande tyle, at iijjs. iijd. sm. . iijli. vs.
Itm, pd. to Ambrose the smith for
viijc iron worke for windows and
doors..... vjli. xjs. iiijd.
Pd. to William Nap for helping to
carry lyme on the holydays iijd.
Paid to John Vasse, and William
Grene, for carriage of xxij lodes
of stone from Ixworth..... xvixs. iiijd.

Paid to John Parker for carriage of
ix lodes of ledd from the abbey
in the town iijjs.
Paide to Robert Reyner for car-
riage of xix tonne of stone from
Bertell Bridge to Brandon xxijs. ijd.
Pd. to William Barber for iij weeks
at the Kingscliffe, meate and
wagis..... xiijs. ijd.
Paide at Thetford for vj weeks
borde of iij men and a month of
j man xxixs. iiijd.

PROPOSED MANUFACTURE OF SALT FOR MANURE.

(FROM A CORRESPONDENT.)

Manufactories are about to be established in various parts of the agricultural districts, for the purpose of supplying the farmers with marine salt, soda, and lime for manure, at a reduced rate—and this is to be effected by establishing these works, in such situations as are most easy of general access.

Some pamphlets, which have just issued from the press explanatory of these great objects, we commend to the serious attention of the agricultural interest; for if the conclusion of many agriculturists, with regard to the fertilizing properties of common salt, and also when the same manure is mixed with lime, or soot, are found to be correct (and recent important experiments of Mr. Bennett, in Wiltshire, go far to confirm the truth of their asserted value) then there can be no doubt but that any plan which shall reduce the first cost of the materials will be in every way worthy of the countenance and support of the agriculturists of this country.

The proposal works are to be erected it seems under the authority of a patent granted to Mr. Wilson, and to Mr. Baylis, or other approved process, and are now introducing to the notice of agriculturists by Mr. Cort, the late Secretary to the Central Society; a gentleman, who has on several occasions not unsuccessfully endeavoured to serve the cultivators of the soil. In the 12th edition of Mr. Cuthbert Johnson's "Observations on Salt," just published, are the following remarks of Mr. Kimberley, of Trotsworth.

"I have used decomposed salt for upwards of ten years past, in considerable quantity and with the most satisfactory results, principally in the way now so strongly recommended. I have also used it for cattle, sheep, horses, and pigs with undeviating success, not only as a preventive, but cure of disease; in fact I am not aware of any condiment equal to salt properly administered, that so much assists in improving the condition of all kinds of stock, while it increases the durability and value of their manure. With reference to the applicability of marine salt for my liquid manure, I have no hesitation in stating that it is one of the most valuable ingredients of its basis, and a material that every farmer should have in his possession, as one of the most important means of supplying himself with manure at all times, and therefore any measure that will cheapen and facilitate the introduction of salt into the agricultural districts, as now contemplated by Mr. Cort, will confer an incalculable benefit on the landed interest, as I consider salt, in its various combinations, one of the most essential of our artificial manures, for agricultural and horticultural purposes. It also appears to me that if the proposed local salt companies could be established contiguous to chalk or lime stone, so that the latter could be prepared with the same fuel, and salt as well as lime could be delivered at half its present price, there can be no question but that an immense continuous increase in the consumption of salt would take place, and the land might be dressed at a cost of from 15s. to 20s. per acre, equal to the best horse manure."

THE VETERINARY COLLEGE AND THE ENGLISH AGRICULTURAL SOCIETY.

(FROM THE VETERINARIAN, DEC. 1)

The session of 1838-9 commenced at the Veterinary College on the 19th ult. Professor Coleman looked in much better health than at the close of the preceding session, and, occasionally excited by his subject, gave us manifest and pleasing proof of more considerable bodily and mental power than many of us can hope to possess at so advanced an age. The lecture commenced with the usual history of the horse, and the same rapid but talented sketch of the structure and functions of the foot. He then proceeded to offer some advice to the student on certain subjects connected with his studies.

As to comparative anatomy, he said that he had been shamefully misrepresented in what he had been accustomed to say on this point; and, as there was now pretty plain, and, afterwards direct reference to the writer of this article, he must be forgiven if, without violation of all due courtesy to his accuser, he endeavours to set this matter right.

Not many years ago, Professor Coleman was accustomed to devote a portion of his lecture to a direct attack on the study of comparative anatomy. He used to say, "I dislike comparative anatomy, for it leads to comparative physiology, and to comparative pathology, than which nothing can be more mischievous." We never could understand the meaning or the object of the Professor; but we saw the effect of it in the conduct of the pupil, and in the manner of conducting the labours of the dissecting-room. There was no comparative anatomy. The horse was the only study of the pupil; and he neither wished nor dared to extend his researches farther.

The Professor was remonstrated with on this point, and his language was more guarded. He warned his pupils that comparative anatomy might dangerously mislead them—that where similarity of texture and of structure existed, the student might too hastily take it for granted that there would be similarity of disease, and similarity of effect in the remedial measures adopted; and that there was often an almost inconceivable difference in different animals, in the diseases to which the same organs were exposed, and the effect of the same medicines. Had the Professor added that he was warning them against the *abuse* of comparative anatomy, and not against the guarded study of it, there could have been no objection to this; but not having done that, the effect produced was the same on the mind of the pupil and the inquiries of the dissecting-room.

A few years, however, stole on, and the enmity to, or the dread of comparative anatomy returned, and the language of Mr. Coleman was more unguarded and violent than ever; for he said in plain language, that, "different as was the structure of the various organs in animals and in man, and varying as they did in the numerous classes of animals, the student might be misled by analogy, but never could arrive at any legitimate or useful conclusion." The diseases of the different quadrupeds were essentially different. It was impossible to predicate the symptoms, or what should be the treatment of one animal from what we knew of another; and comparative anatomy was too apt to lead on to comparative physiology, and comparative pathology." This, I suppose, is the misrepresentation of which the Professor complains; but *these were his identical words*. For the truth of this I* appeal to any or to every student who heard Professor Coleman's introductory lecture in 1836.

Having made this triumphant attack upon his opponent, the Professor accuses him of having *anonymously slandered him*. Now, confessing that for every

communication which does not bear the name of the author I am answerable—(I do not, however, believe that there is one,)—and that for every leading article also to which the initial D, or K, or P, is not appended, am answerable, and acknowledge it to be mine, (and every reader of the *Veterinarian* has long understood this), *I publicly call on Professor Coleman to prove the charge which he has brought against me.*

The Professor follows up his attack, and gives his foe no rest or quarter. "I have been told," says he, "of letters received from those who have been sent into the country uninstructed in the diseases of cattle and sheep that would make one's heart bleed. I should like to see one of these heart-bleeding or heart-breaking letters. I acknowledge that I have not any compunctious visitings about the matter."

In a private conversation with the Professor, and when I was speaking to him of the injustice of sending a young fellow into the country totally ignorant of the diseases of the animals that would form a considerable proportion of his patients, and the disgrace, and loss of practice, which he would inevitably sustain, Mr. Coleman was disposed to laugh at me. I told him that I had letters in my possession which would make his heart bleed. He sneered at me then, and he now repeated that sneer in his introductory lecture. I will reply in language which I used many years ago, and then not labouring under any feelings of irritation. It formed part of *my* introductory lecture in 1828. "I never met with a veterinary surgeon in the country who did not express his deep and bitter sense of the inconvenience he had felt, and the loss he had sustained, both in reputation and emolument, from being sent into life ignorant of a very important part of his practice. During the course of his veterinary education he had heard little or nothing of the diseases of cattle, the symptoms by which they are distinguished, the causes by which they are produced, or the treatment which they require. He has just arrived at the place of his destination. A wealthy agriculturist, whose good opinion it is of the utmost importance for him to acquire, calls upon him. "A sad disease has broken out in my dairy," says he, "and I have lost several valuable beasts. I wish that you would come, and tell me what is to be done?" Poor fellow! What shall he do? Shall he boldly face the danger? He will at once be detected as a mere pretender; and if he is found a pretender in the treatment of cattle, his knowledge of the horse will be more than doubted. He will derive no more assistance than is absolutely necessary from the servants. They view him as an intruder on the rights of the old farrier. The master, the servants, perhaps the farrier snug in some corner, are looking on. Shall he candidly confess his ignorance? The farmer may appreciate his candour, but he will think slightly of him and the school from whence he comes. 'Give me the old farrier,' will pass in his mind, if he does not plainly speak it out. The horses will, in all probability, soon follow the cattle; and the veterinary surgeon will be consigned to derision and contempt. Is it not cruel to place a young man of principle and of feeling in a situation so painful and degrading?"

From practitioners thus situated, I have received many letters containing statements like this, and that *would make any man's heart bleed*. But no, said Mr. Coleman—and almost in so many words—in the introductory lecture of the 19th ult.—the pupil is not sent away thus unarmed. He has been taught the laws of health and disease. He has been trained to the observation of symptoms—he can connect certain symptoms with the presence of certain diseases—he can draw a tolerably satisfactory conclusion—he knows the usual medicines of cattle, and he can pretty well guess what should be done: or, *if he should err in the first case that comes before him, he will know better another time.*

I will not ask how far this is consistent with the tirade against comparative pathology, and the impossibility of drawing any satisfactory conclusion from it. I will not ask how far it is consistent with common honesty; but I will pass on to a pleasanter subject.

* For evident reasons I drop the editorial *we*, and speak in my own person.—Y.

When speaking of the extension of the knowledge of the pupil, and the introduction of demonstrations of the anatomical structure of domesticated animals, he stated that "it was possible that buildings might be erected within the College walls for this purpose, and that he would contribute to the best of his power to follow out the plan suggested by the English Agricultural Society." I wish that there had not been a damper immediately following this, viz., that "he must be forgiven if he feared that the scheme would not answer so well as the Society expected." If the Professor will kindly convince the Society of this, they will go elsewhere.

Grateful, however, for the concession which the Professor has made, and if he does devote himself to the accomplishment of the purposes of the Society, the writer of this article pledges himself, that, neither as Editor of this Journal, nor as Chairman of the Veterinary Sub-Committee of the Society, will he do any thing to annoy: but rather will he try to propitiate, and to please, and to hasten the arrival of that period when they may be fellow-labourers in the promotion of a good cause. But the anonymous slandering? Why! in such a case, it and something else, should be considered as a *misconception* both of meaning and of fact, or should be no more remembered. Y.

ON THE PROBABLE FUTURE PRICE OF WHEAT.

Subjoined is a letter signed "Veritas," from a correspondent whose sincerity in the advice which he offers to the farmer we have not the slightest reason to doubt, and whose remarks are worthy of the serious consideration of the grower of corn. Whenever the price of wheat increases, however that increase may result from causes over which the farmer can have no controul, it is not uncommon to hear him loaded with reproaches, more especially if it be known, or even suspected, that he withholds his grain from market in anticipation of still higher prices. These unreflecting censors do not consider that if the price to the grower be enhanced, the very cause of that increase of price—namely, a deficiency of available produce—is a loss to the farmer. But we hold it to be a proposition, the soundness of which cannot be disputed, that the farmer has as much right to hold back his grain in expectation of obtaining an advanced price, as the grower or manufacturer of any other article. Whilst, however, we fully admit his right so to do, it becomes a question to what extent he should become a speculator, and how far under the circumstances (and we are now alluding to the present time), the expectations which he entertains are likely to be realized. As in years of cheapness plenty leads to profusion—we might have said waste;—so, in years of dearth, scarcity gives rise to economy. The season of 1835—6 is fresh in our recollection, when a large quantity, if not of the best, of the secondary qualities of the grain commonly used for the food of man, was given to cattle. Independent of the care with which, in consequence of present prices, every grain at all fit for market will be preserved, can it be doubted that less bread will be consumed in three-fourths of the families in the kingdom, when that article sells at tenpence the loaf, than when the same quantity could be obtained at half that price? The wages of the labourer and the mechanic, although some increase may be made, will not advance in proportion to

the price of the staff of life. The salaries of those who are working at annual engagements will not be increased upon an occasion which will, by most persons, be considered temporary; and the dependants upon *small* fixed incomes, of which it is well known that the greater proportion of those who receive the interest of the funds consists, can obtain no increase. How, then, must all such persons meet the increased cost of this article of subsistence, but by a decreased consumption, and the substitution of other articles. The maintaining of prices will operate as a premium for the production of supplies from every corner of Europe. Some time since, when the demand for wool was great, and prices averaged very high, supplies of that article were produced from places which had before never been heard of. The landowners in those parts of Europe, where their income is solely derived from the labour of their serfs in the production of grain, will have an opportunity which they have not had for some years, of realising good prices for every quarter they can spare. All these circumstances combined convince us, that, although prices may continue high, there is no apprehension of an actual scarcity, unless, indeed, that misfortune which we will not anticipate should befall us, namely, another deficient harvest. So long, therefore, as our farmers keep back the grain from market, they offer encouragement to the obtaining an extraneous supply, which will not be lost sight of by the active and intelligent merchant. For the consumer this course may in one respect operate well, by bringing forward a supply, and guarding against actual want. But if the home grower should, by over speculation, cause a larger foreign supply to be brought in than the deficiency warrants, he will have to sell hereafter at a reduced price; the foreigner will have received the highest price, and neither the consumer nor the home grower will have been benefited. It must not be forgotten, that, independent of any hesitation which the farmers may feel in bringing their dry corn to market at present, there is a very considerable quantity which is now unfit for use, but which will be in condition so soon as we shall have some good dry wintry weather. Upon looking back we seem to observe a somewhat parallel case in the years 1828—9. The average price of wheat for the month of November, 1827, was 50s. 11d. the *Winchester* quarter. The season of 1828 was wet; a large portion of the crop in the great corn growing counties was housed in bad condition; but in the northern districts, the weather having cleared up, it was well secured. The crop proving deficient, prices reached 73s. per *Winchester* quarter, in the month of November of that year, and the ports became open at the lowest duty. Between the harvests of 1828 and 1829 about 850,000 *Winchester* quarters of foreign wheat were imported, and throughout the year 1829 prices continued to fall, until in November of that year they had declined to 54s. 8d. the *Winchester* quarter. In the month of November, last year, Wheat averaged about 53s. 1d. per *imperial* quarter. In November of this year it will, in all probability, reach 73s. 6d. per quarter *imperial*.

We call the attention of the growers of corn to

these facts as worthy of their consideration, and more particularly as the case seems somewhat analagous. Prices receded through the whole of the year 1829; we shall be curious to see how they will be affected in 1839.

SIR,—I am a constant reader of your paper, and carefully look over the various reports, general and particular, which have reference to the present position of the corn trade, as well as the speculations as to what may be expected to mark the future course of this most important branch of social commerce.

That there is a considerable deficiency in the wheat crop, is now indisputable, and upon the amount of this deficiency, hinges the solution of that query, which to the labouring population of our country, is paramount to every other, viz., whether bread is to be at a moderate or exorbitant price. I shall not presume to say how high prices are likely to attain, but I firmly believe, that if the farmer pursues his present course they will be almost out of the reach of the poorer classes. From some undefined expectation of realising still higher rates, scarcely any wheat appears at the different markets of this neighbourhood, and millers are hard set to get the necessary supplies. Now, this holding back, is based upon the notion of a deficiency so extensive, that neither from our own resources, nor any extraneous additions thereto, shall we be able to reach another harvest. Is this a fallacy or not? Let us see,—we have already passed one-third of an average agricultural year, and how are the stackyards going on? Are they less cheering in their aspect than usual at this period? Do they exhibit any symptoms of premature exhaustion?—Not they! on the contrary, I assert most fearlessly, that many, very many of our larger farmers, have not even thrashed their own seed, but have bought in the market, and *now* have their entire crop untouched.

Look at the returns from most of the large markets, and to London particularly, has anything like an average quantity been reported? Indeed the supplies to the metropolis have been so limited, that it only required a couple of speculators on each market day, to deal with them as they pleased; and has any material deficiency ever been complained of in the counties immediately surrounding London? Certainly not; *there*, quantity is satisfactory, and quality excellent. Why then is London without supply? I answer, because the farmer, infected with a speculative mania, believes the future has something better in store for him; and by reading the exaggerated reports of interested parties, imbibes the *idea* of a deficiency that cannot be supplied. The speculator is wise in his generation, he creates alarm and keeps it alive, he wants only a nominal duty and he succeeds. We have already had released a million and a half of quarters of wheat besides a considerable quantity of other grain and flour, and there does not appear any reason to doubt our ability to obtain a million and a half more. Our crops of all other grain are abundant, and of fine quality, and will doubtless be appropriated by admixture or otherwise, to the purposes of human sustenance. In addition to this, the dearness of food will prevent waste or profusion, and greatly economise the consumption. Upon the whole, after anxious enquiry and observation, I see no cause for alarm. I believe there will be food enough and to spare.

It may not be amiss to observe, that we have had a fine seed time, and that a greatly increased breadth of land is under the cultivation of wheat, so that if it should please the Almighty to give us "the former and the latter rain" and a moderately early harvest, the hopes of the speculators will be completely frustrated, and the story of 1831 repeated, and those farmers who now withhold their grain from the market, will, as the season advances, find themselves competing with unlooked-for supplies of foreign produce, and a great reduction in price is far from improbable.

I am, Sir, your's very respectfully, VERITAS.
Gainsbro', Nov. 28.

UNITED STATES—FLOUR TRADE.

FROM THE NEW YORK EXPRESS, 24TH ULT.

The trade in this most necessary article is so important, that we have compiled a few tables that may not be uninteresting to the public. The great wheat growing states are New York, Pennsylvania, Ohio, and latterly Indiana, Illinois and Michigan,—Virginia, Maryland and North Carolina also to some extent. The following is the table of prices for the last forty-four years:—

Yrs.	Prices.	Administration.	Yrs.	Prices.	Administration.
1795	\$ 12	Washington	1817	\$ 14	Monroe.
1726	16		1818	10	
1797	10		1819	8	
1798	7	J. Adams.	1820	5	
1799	10		1821	4	
1800	10		1822	7	Adams.
1801	12	Jefferson.	1823	8	
1802	9		1824	7	
1803	8		1825	5	
1804	8		1826	5	
1805	8		1827	6	
1806	8		1828	6	Jackson.
*1807	8	Madison.	1829	8	
1808	6		1830	5	
1809	8		1831	7	
1810	9		1832	6	
1811	11		1833	6	
†1812	11		1834	5	Van Buren.
1813	13		1835	8	
‡1814	14		1836	13	
1815	9		1837	9	
1816	8		1838	8	

It appears that prices ruled the highest during the administration of Gen. Washington, which was immediately after the American revolution. In that of the Elder Adams, high prices were maintained. In the eight years of Mr. Jefferson's term, prices were very uniform at moderate rates. Under Mr. Madison's administration, and at a period of peace and war, prices were high and fluctuated. Under Mr. Monroe's, Adam's, and Jackson's, embracing a period of twenty years, prices ruled at least two dollars below the previous twenty years.

The following table exhibits the receipts of flour down the north river:

	In 1837.		In 1838.
April.....	12,196	April.....	26,746
May	49,892	May	100,943
June	27,183	June.....	99,646
July	52,517	July	84,848
August	30,786	August	74,254
September....	62,612	September....	103,305
October.....	148,456	October.....	
November....	244,064	November...	
December....	47,685	December ...	
	680,079		489,741

For the last two years—not including the last three months of the present year, the result of this year cannot be known, but there is no question it will exceed a million of barrels. Last year there was imported into this city upwards of four millions of bushels of grain, this year there will probably be more. It is calculated that the amount of breadstuffs

* Embargo.
† War with Great Britain.
‡ Peace with Great Britain.

wanted for the Eastern States will be sensibly diminished. The demand from the West Indies and South America will, in consequence of the short supplies in Europe, fully make up any short demand from other quarters. Our article, it will be seen, is principally composed of Western supplies by the canal. It is very difficult, in fact impossible, to make up any correct table of the supplies from the mills on the North River. From the South or from New Orleans, as the best criterion of these supplies we give the following table. As the flour consumed in the city is not required to be inspected, this may be added to the table. The city consumption is computed at 1,000 bbls. per day, which for 365 days is 365,000.

The following is the inspection of flour for the last sixteen years :

1822	331,670	1830	767,387
1823	409,016	1831	893,846
1824	434,788	1832	998,167
1825 —....	459,113	1833	1,003,446
1826	520,577	1834	1,257,703
1827	597,648	1835	1,154,613
1828	695,900	1836	1,138,554
1829	686,696	1837	904,488

The above table shows that there has been no increase of flour since 1834; and establishes the fact, that the crops during these years have been short.

The operations in Flour in this city are immense, being over a million and a half of bbls., which at eight dollars will amount to eight millions of dollars.

We propose to give the general course of this trade and the manner of doing business with the West.

The principal mills are at Rochester, and have increased to an astonishing extent, not only at Rochester but at Black Rock, Orange, Seneca Falls, and at various other places. Men of large capitals are embarked in the business. New York which formerly supplied all or nearly all the wheat manufacturers, now only supplies her quota. Ohio, Pennsylvania, and Michigan furnish a very large portion of the wheat that is manufactured. The quantity received this season will be over a million of barrels. To purchase wheat for this great quantity requires a vast capital, greater than even those engaged in the business, rich as they are, are enabled to supply. The purchase of wheat, the sale of the flour, and the raising of funds, are therefore very important branches of the business. The raising of funds is accomplished mainly in this way. The miller first selects his agent in New York, with whom he makes arrangements for the raising of money. This is done by placing in the hands of the agent ample security, by mortgages on mills and personal security; a credit is thus established for fifty or a hundred thousand dollars from the New York merchant who comes under a stipulation to accept drafts for the sum agreed upon at usually sixty or ninety days, and this before a bushel of wheat is purchased or a barrel of flour ground. These drafts are made at the pleasure of the drawer, and the interior banks mostly at Rochester, Buffalo, Canandaigua, Utica, and Albany, discount these drafts. Their bank notes are received with which the purchasers of wheat are made by agents at different points in New York, Ohio, Pennsylvania, and Michigan. The banks are benefited by the circulation of their bills. The miller obtains his wheat,—the canals, manufacturers, and commission merchants are all benefited, and the consumer is not injured. The commission merchants, who receive this million of barrels of flour, are confined to a very few, not probably exceeding ten in number. They must necessarily be men of good credit and

great means, as they are during the year under acceptances, one way or another, for eight or ten millions of dollars. Their commission on this large calculation at nine million two and a half per cent. is two hundred and twenty five thousand dollars,—a large sum for the millers to pay—and a liberal sum, but not too much for the merchant to receive for the hazard he has to run—the advances he has made, and the services performed.

We can form little or no calculation ourselves as to the prices of flour for the coming winter.—It has been stated pretty generally in the papers in various parts of the country that the wheat crop has been large. It is now doubted whether these reports have not been exaggerated, and it is much feared the crop has not been as great as was anticipated. Until within a very few weeks the rivers have been so low, that many of the mills have stood idle. The quantity of wheat grown in New England is greater than ever, and the crops of corn and potatoes in that section have been good. The supplies, therefore, for that quarter will be less than usual. This demand, however, must be more than made up by increased supplies that will be wanted from South America and the West Indies—a large portion of which cannot be furnished, as heretofore, from England, and some portion of the Continent—whether prices will advance or not, time must show. There is, we fear, but little prospect that those will fall much from present rates.

TO THE MEMBERS OF THE DEVON AGRICULTURAL SOCIETY.

In my communication last week I treated on the profit and loss to the feeder, my remarks shall be now to consider it as regards the consumer, in doing which I will first speak of the wasting joints, which being very thick, must necessarily require a greater quantum of coal than fair-fed meat of less density; this additional quantity of fuel not only increases the price of the meat, but it also facilitates the solution of the fat to a much greater degree, and being left in the dripping-pan, generally becomes the perquisite of the cook; whether it be or not, it is sold to the tallow-chandler at about one-third cost price, and the joint when brought on the table still contains twice as much fat as is eaten in the parlour, and we need not be told that the kitchen never consumes what is left on the parlour plates. The result is, that half the dressed fat is given to the dogs, and upon a very moderate calculation, not more than half the weight of the original joint is eaten by human beings. I am at a loss then to imagine how there can be two opinions on this head, and I believe it must be obvious to every reflective mind, that has paid but even little attention to the subject, that the system is fraught with disadvantage in every point of view. I am as decidedly averse to slaughtering half-fed stock—the loss is equally clear and evinces a weakness somewhere, generally I expect in the pocket, if so, it may not be under the feeder's controul, and may be denominated a sign of the times. It may be a difficult task to determine the exact proper time to kill a bullock, so as to say it is fat enough, and not too fat: yet I conceive its arrival at that state of adiposity, when the fat does not bear too great a proportion to the lean, and that all of it may be fairly calculated on for edible purposes, is the fair criterion to judge of its being then in a proper state to pay the most general profit.

Now I contend that were two bullocks fed with

natural food of exactly the same cost as one of these extra-fed ones on corn, &c. the feeder and the butcher would both be better compensated as to profit, and the consumer would not have paid more than half the price for every pound actually eaten by his family.

I am willing to admit my argument does not hold good as relative to Swine, fed and consumed by the farmer; the scale evidently preponderates on the other side:—in the first place, the habits of the bullock and the pig differ very materially constitutionally; the former is a clean and mostly delicate feeder—the latter quite the reverse, so as to merit the appellation of the scavenger of Nature. We have only to view the large heaps of scavenger's manure near the Metropolis, &c. to be convinced from the number maintained, and the proof they make, that they are not over nice as to what they eat, but that they have a natural aptitude to fatten; when a pig begins to thrive, and has nearly done growing in size, it appears to be perfectly contented and happy, passing its time in laying down, and a considerable portion of it in sleep; this indolent habit and a contented mind naturally produce bulk, and so it will continue to do as long as it can raise itself from the ground, and even when it cannot, it will feed provided its food be brought to it and will also increase in weight, and with this advantage, that the fatter it gets the less quantity of food satisfies it, so that the longer it is kept the better it pays; and when killed, every pound of fat is as valuable to the farmer as the lean, as every ounce is eaten by the family, and thereby not an atom is wasted—no conversion into soap and candles—the very reverse of the extra-fed bullock, a considerable portion of which proves a national loss, and although cursorily viewed it may appear but a trifle, yet as an aggregate it is immense, if we calculate the number that reach Smithfield against Christmas only, and considering these as half, the amount throughout the kingdom exceeds credibility.

AGRICOLA.

Nov. 27th, 1838.

SIR T. LETHBRIDGE AND THE CORN LAWS.

SIR,—The letter of Sir Thomas Lethbridge, in your last paper, will, on attentive perusal, be found to contain a string of propositions most unconnected, and attempted to be supported by the most illusive arguments. No determined adherent to the present system of corn laws could desire an abler document in support of his tenets than this far-famed letter of the Somersetshire baronet, pregnant as it is with error, contradiction, and inconsistency.

It is not my intention to set up a justification of the present scale of duties in all their bearings, or to deny that alterations or modifications might be advantageously made; but I trust I shall be able with little trouble to prove the unsoundness of the hon. baronet's views, and the irreconcilable nature of his several propositions.

After many introductory remarks, it is asked—"If your ports are always open at fixed duties for cotton, wool, silks, timber, and other articles, why should they not be so for corn?" Is it not notorious, that on the importation of the articles enumerated depends the daily bread of millions of our countrymen? They are essentially products of foreign climes, and which we are utterly incapable of producing—even the article of wool in

its fine state. Is there the most remote analogy between the two cases? Could any reasonable man propose to put wheat, the staple production of this country, and upon the remunerating price of which the very existence of so many classes hinges, on the same footing as to duty, as articles of which we stand in actual need, and which it is our policy to obtain at the cheapest rate? they being the raw material, without which our manufactures must stand idle, and that portion of the population employed therein reduced to starvation. Does the hon. baronet mean to contend that, on an average of seasons, this country cannot grow a sufficiency of wheat for the consumption of its inhabitants, or with a very small deficiency, of which the present corn laws have always allowed the introduction from abroad upon reasonable terms? Let him refer back to the years 1833-4-5-6, and mark the progressive fall in each of those years of full crops, with the smallest importations ever known; and to so low an ebb did prices sink, that, in October, 1836, the average price of Mark-lane was 35s. 8d. per quarter! with a duty then totally prohibitory on foreign corn; and so great was the excess of supply, of our own growth, that horses, pigs, cattle, and dogs were fed with bread and corn in order to quit rid of it. If Sir Thomas or some other "friend of the farmer," had recommended the government to have bought up the then superfluous growth, it would have caused a little animation in the markets—something approaching fair prices might have been the consequence, and the markets would have been since regularly fed by our own growth produce; we should not then have seen millions of English gold paid away for foreign wheat at 66s. or 70s per quarter, nor would our merchants have been compelled to ransack the whole world in vain attempt to raise us a sufficiency for our murmuring poor. But instead of this wise policy being adopted, the food of man was shamefully squandered; and farmers, in despair, abandoned the cultivation of the soils, not of the best quality; and here we are, in 1838, with a fearful deficiency on a vastly diminished breadth of acres.

The first and sure effect of an 8s. or 10s. duty would be, in a season of average produce, an overwhelming supply from abroad; they could well afford to sell, as will be presently shewn, at from 44s. to 48s. per quarter, with this duty. The land now about to be brought into cultivation again would be abandoned—we will assume no more than one-fourth. We are supposed in England and Scotland to appropriate four millions of acres to the growth of wheat annually, which, at 24 bushels to the acre, amounts to 12,000,000 quarters; take from this the one-fourth abandoned, we have to crave the tender mercies of foreigners for three millions of quarters, or we starve. Is not this an enviable condition to bring us to? Left at the mercy of foreign, probably hostile powers, to supply us with the first necessary of life, does the hon. baronet suppose they will not ascertain our wants to a nicety, and knowing we must starve, or buy at their price, ensure that monopoly which the hon. baronet contends is now held by our merchants? Encourage, Sir, the production of wheat at home; cultivate some few of the fifteen million acres of now unbroken, unproductive land in Great Britain, and I will pledge myself that on an average of years you will more effectually guard off famine prices than by making us dependent on foreign states. There is now, including these now waste acres, sufficient

wheat to be produced to maintain ten millions more inhabitants, and if Old England, in her present greatness, can ride over the rough seas of trouble prepared for her, until this number is added to our present population, the generation then alive may perhaps be justified in adopting the recommendations of the Somersetshire baronet. Sir Thomas says "that 8s. per bushel is high enough for wheat"—so say I, and even 7s. 6d. would satisfy us with average crops; but how is either sum to be realised with an 8s. or 10s. duty? Let the evidence taken before the parliamentary committees of 1836 be referred to, and it will shew, beyond the possibility of dispute, that foreign wheat can be sold at a profit on an average, in the English markets, at 32s. per quarter, or 4s. per bushel; taking the minimum duty of Sir Thomas, it will be 5s. per bushel, or 10*l.* per load; how does he reconcile his admission that 16*l.* per load is about a remunerating price—his professed regard for the landed interest, and his advocacy of a fixed duty of 8s. per quarter? To me these points appear totally irreconcilable.

Again, the reference to the article of wool, as shewing the advantage of free trade, is of all things the most unhappy. Here again we want the aid of a foreign clime, for be it known to the hon. baronet, it is an established fact, that one-half of our English coarse wools would not be manufactured at all but for the admixture of foreign fine wools, the mixing of the two being indispensably necessary to the production of the manufactured articles in which our clothiers are driving so great a trade. Here we have a demand for our own growth of wools indisputably created by the introduction of foreign. His argument, therefore, instead of being supported by this comparison, is miserably weakened.

Again—"The time is arrived when the land-owners and occupiers can prove to their countrymen that they are ready and willing to compete with the foreigners on fair and equal terms." Bravo! Sir Thomas; here we at last agree to the very letter. I know not the politics of the hon. baronet but, having myself a perfect abhorrence of the principles of Whigs, Tories, and Radicals, I am most anxious to be made acquainted with the means whereby we are to be put on "fair and equal terms" with foreigners. Is Sir Thomas prepared "to go the whole hog" with ultra-radicalism in sponging out the debt, battering down the churches, and tearing the crown from the brow of royalty. To make us level with many of our wheat supplying friends, Sir Thomas must do this; and if the nation is prepared to make this barter for cheap bread, it no doubt can be eaten at foreign prices; but until this great resolve is made, let me entreat Sir Thomas to weigh more maturely his propositions on the corn laws—to refrain from publicly maintaining the mad scheme of fixing 8s. per quarter on the protecting duty on tax, tithe, and poor-burthened English corn, when it is a fact, clear as noon, that a fixed duty of 30s. would no more than secure what he allows as a remunerating price. The same dread appears to have haunted Sir Thomas, viz., that of being prolix, operates on me, or I should with more care, and at much greater length, have commented on his inconsistent and untenable opinions; but as the present high prices of corn (which are indisputably owing to the ruinous prices obtained by the English farmer in 1835-36), will lead to much agitation on the subject, I trust the advocates of the present scale of duties will not shrink from the

discussion, being well convinced, if fair play is given to the disputants, the fatal policy of the repealers will be made so conspicuous to all not wilfully blind, that the result will go a great way towards annihilating that iniquitous spirit which, under a specious cloak of obtaining cheap bread, would still further enrich the overflowing coffers of the capitalist, and non-producing classes of the community (already freed from their just quota of public burthens), at the expence of the whole producing classes, whether agricultural or manufacturing, by depriving them of employment in their several occupations. The story of the Irishman should be borne in mind. He was asked why he came to England, where bread was 15d. a gallon, while he could buy it in Ireland for 10d. Arrah! (said Pat) I can earn 15d. in England, but in Ireland nothing; of what benefit then is the ten-penny loaf, if Pat has no tenpence to pay with?

I am, &c.

A FARMER.

Whitchurch, Dec. 7.

TO THE EDITOR.

SIR,—As a practical farmer nearly 50 years in the counties of Essex and Suffolk, upon a soil what is termed white clay, I am astonished to hear the "hoary-headed swain" assert with such confidence "that a naked fallow is totally unnecessary."

I beg to assure him, the lands in the vicinity of Dunmow, Braintree, the Roodlands, (where they in many instances adopt the system of one crop and a naked fallow for years in succession), and a great part of the Hundreds of Essex were farmed otherwise than the four course shift, that is clean or naked fallow once in four years; otherwise very little corn indeed would be grown.

I contend, you cannot manure a fourth of any arable farm, a year. 12 tumbrill or cart loads per acre, each cart to contain 45 heaping bushels, or 540 bushels to the acre, with no earth, chalk, lime or any other compost with it; and in many thousand acres so situated no manures can be purchased.

I believe, for every 100 acres were you to keep 10 beasts in the yard six months, allow them 500 oil-cake, (3*lbs.* per cake) per bullock, also one ton of hay each, and one bushel of turnips per day each, also five working horses, and two colts, grazing 50 pigs a year, 300 carts, or 13,500 bushels of good fair rotten muck could not be annually made. Of course no good farmer suffers any straw to be eaten by cattle, except a small quantity cut into chaff; also horses to consume 15 tons of clover and hay, also six acres of tares, consumed in the yard. A good fair crop of straw shall be grown, and I contend not 250 loads, or 11,250 bushels of good fair rotten muck shall be made.

It is not uncommon where manure may be bought in towns or had from London, for farmers to buy 2,500 bushels of muck (25 waggon loads) for every 100 acres of arable land, also 500 bushels of sprats every year for the same quantity of land, and yet make 25 acres of naked fallow to every 100 acres, and to do otherwise upon these clays, the rents on which are from 20s. to 30s. per acre, tithes, 6s., and rates 6s. per acre, and labour and beer 25s. to 30s. per acre; to deviate from this system of naked fallows, would be considered very bad farming indeed.

Many farmers, it is here admitted, grow from 6 to 10 acres of tares every year, feed or mow them, and

fallow after them ; also five or six acres (if they can get a plant of Swede turnips or mangel wurzel). But all will tell you how dearly they pay for this crop, and say they had better buy cake than grow turnips or mangel.

What appears to us clay land farmers so very extraordinary is, that this old practitioner says he produces on his light land farm, 39 tons, 14 cwt. and 7lbs. of turnips upon one English (160 square rods.) What sort or kind of turnips are they ? When sown ? How many times the land ploughed, scarified, harrowed, and rolled (of course so good a farmer never grows twitch grass or weeds that are not many times harrowed) ? How many bushels of manure per acre (not carts as they vary in size in different counties) ? What is the nature of the compost, what weight of rape cake, or bushels of bone-dust, drilled with the manure, and how many acres of this weight of turnips produced annually ? We should be glad to hear these questions answered. Also, are these turnips topped and tailed, and made fit for the beast, when weighed or with roots and tops upon them ?

I have seen by the river Stour in Suffolk, some excellent turnip land, and Swede turnips grown upon them. I have assisted in measuring and weighing many acres after they have been topped and tailed in a proper state to be given to the beasts in their stalls. But I never saw 22 tons upon one acre in that state when weighed, and I have known the land well fallowed and manured with 650 bushels per acre of good rotten muck.

But what are we to think and to say to this gentleman's statement of 51 tons, 17 cwt. 16lbs. and 10 ozs., being grown upon one English acre ? I can say nothing here, but if there is a railroad from London, to near this gentleman's house, and he will be so friendly as to give me an invitation, I shall be most happy to accept it, to view his wonderful production, and be content with turnip and bacon for my fare. But on my return I should be silent, as I fear none of my brother clay land farmers would credit what I might assert as a fact, or any of my Norfolk friends who are notorious for growing most excellent turnips.—I remain, Sir, your obliged,

AN OLD PRACTICAL FARMER.

LETTER FROM LORD WESTERN TO EARL SPENCER.

MY DEAR LORD SPENCER,—In addressing you as the President of the great Agricultural Society of England, I anticipate, with considerable anxiety, the charge of presumption which the subject matter of my letter may incur. I know, indeed, that you will put a favourable construction upon it, as your friendship will lead you to appreciate the motive. But I think that the representation of the attempt which I am about to communicate will, perhaps justly, subject me to the notion of being a visionary projector in that one particular line of farming to which I have, as you know, devoted great attention.

I will then at once announce to your lordship that I have, for the last four years, applied myself to an experiment of the possibility of creating a *new and distinct breed of sheep* ; and, as far as I have gone, the result has encouraged the attempt ; and of this result I intend to exhibit a specimen at the next Smithfield Show. I shall there exhibit three shearing wethers of my so created breed, and three two shear wethers ; and I earnestly request the notice of your lordship and of the other members of the society to their examination.

I have a confidence in doing this, because I have not only my own experience, and the opinion of many other most able judges, as to the beauty of their symmetry,

and their possession of all the qualities which are generally most admired in the living animals ; but I shall also, without hesitation, submit them to public inspection when slaughtered. I beg you to understand, that, in thus attempting to create a distinct variety among the actual different breeds, I have no idea of disparaging those highly valuable breeds which have been so much improved in the course of the last sixty years ; or of impugning the science, the skill, and the energy of many most intelligent persons in various ranks of life, not excepting the most exalted. But I am of opinion that we should never stand still, but rather be always aiming at new objects ; and I sincerely think that that for which I am now striving is not absolutely Utopian. There is plenty of room for the introduction of another breed of animals, without trenching upon, or superseding in any way those which are valuable and now in existence. My object, then, may be familiarly stated to be, the placing Merino wool upon a Leicester carcass ; perhaps not exactly resembling the short finest clothing wool of Saxony, but a fine combing wool, superior to any that has heretofore been grown. It is possible that similar attempts have been made by other persons, but they have not been carried out upon any general principle of extensive application to my knowledge.

The means which I use are an intermixture of various breeds of long wool sheep with the pure Merino ; the latter of which, by the attentive efforts of many years, I have so improved in carcass, that they have become an exceedingly different animal, in point of substance and size, to those which are generally seen. I have now a flock of about a hundred breeding ewes of this crossed species, and they certainly so closely resemble each other in their countenances, the appearance of their wools, and their relative sizes, that no very variable character can be discerned among them ; certainly I may say, quite as little as is to be found in other flocks which are stated to be of a pure specific breed.

With a view to some justification of my purpose, I beg to direct the attention of your Lordship to the breed of the new Leicester sheep. The very name which they have universally acquired—namely, that of the new breed, implies a modern origin. I apprehend that a distinct breed may be created in three ways :—Firstly, by the selection of one or two extraordinary animals—variations from their class—which may arise, as in the vegetable, so in the animal world ; and from thence, if well followed up, a new race may be formed. Another mode is the crossing of various animals ; and among other reports, I have heard that the new Leicester were formed by crossing of the heavy, long wool sheep and the Hereford Ryland. I cannot pretend to vouch for the accuracy of this report ; but I am not sure that I should not date from thence the origin of my present effort.

A third mode is, by engrafting a particular breed upon a native stock in a way which bears some analogy to the engrafting a peach upon a crab stalk. For example, with a view of creating a Merino flock out of any inferior breed of sheep, put a Merino ram to any breed of ewes ; and again a Merino ram to their progeny in constant succession ; and I think it would not require many generations to efface all appearance of the original breed.

That the new Leicester sheep fifty years ago were very scarce, that the prime specimens were in very few hands—so few, that the breeders sold or let their rams at an almost incredible price—is beyond all controversy. These sheep, so bred, and I may say, so created, were first exhibited to the public by Mr. Bakewell, and by a few other clever men who followed close upon his steps ; and the late Duke of Bedford and Lord Leicester were the first, perhaps, who mainly contributed to spread their notoriety and improve their quality. Their example was followed to such an extent, that the prices of their rams even arose—to go at once to the summit—to five hundred pounds for the use only of one of these animals. Since that time there has hardly been a breed of long wool sheep which has not been mixed up with these new Leicesters, although, in many instances, the fact is not readily admitted by the respective breeders.

Certain it is that an infusion of their blood is found,

more or less, in every long-wool sheep, and the breeds, so improved by this cross, perpetuated. They have been crossed with South Downs, but not with a view to the perpetuation of a cross breed. I look upon what is commonly called a South Down to be now a very different animal from the little pure South Down of 50 years ago. The admixture of the Hampshire or West Country Down Sheep, crossed with the original South Down, as now adopted and recommended by Lord Leicester, has created an exceedingly different breed of animal. Lord Leicester has further, by his judgment, and by the method of varying a breed by selection, certainly created sheep very unlike the original South Downs, or any other breed then known. The Holkham sheep are obviously highly valuable in almost every important particular with a view to the grand object, namely, the production of the greatest quantity of sound good meat and useful wool upon the smallest quantity of land.

The contemplation of his achievement, instead of any discouragement, has been to me a stimulus to my own exertions. I know not that I need add anything further in justification of what I have undertaken. I have, however, heard of a similar idea having prevailed, to a certain extent, in some other countries, as well as in this. I have been informed that even in Saxony some attempt of the kind has been thought of; and I am pretty confident that some Leicester sheep have been imported into that kingdom.

I should be going too far were I to prosecute extensively the inquiry into the proceedings which may have taken place in respect to other domestic animals; but I cannot refrain from calling your attention to the contemplation of one of the noblest animals in the creation, and to the specimens, almost exclusively produced in this country, of his improvement; I allude to the English race horse. Is he not unquestionably the creation of an admixture of breeds? Can he be the pure Arab, thus altered and enlarged by selection? I conceive the decided probability to be, that he must be an admixture with other breeds. Then, again, the variety of English horses, from the superior hunter to the hackney? Is not such a composition, which must have been formed at various periods of time? Is not an infusion of Arab blood into every breed more or less prevalent, and in almost every case useful?

To descend from the horse to the lowest animal in estimation, though, perhaps, not the least valuable, namely, a pig: it appears to me that an important change and improvement have already taken place in some districts in the breeds of this animal to a considerable extent, and which is further progressive in other parts of the country. This has been accomplished by a breed commonly called the Neapolitan, which race is found in its greatest purity in that beautiful peninsula, or rather a tongue of land which lies between the Bay of Naples and that of Salerno. It has very peculiar and valuable qualities: the flavour of the meat is excellent, I should say superior to that of any other breed; and the disposition of the animal to fatten, on the smallest quantity of food, is unrivalled. I have so completely engrafted this stock upon British breeds, that I think that my herd can scarcely be distinguished from the pure blood.

Upon a similar principle a great effort, I understand, is making at this time by a few intelligent individuals to engraft the Cashmere upon the Angola goat, so as to grow upon the latter the beautiful wool of the former. This attempt was first made by a French gentleman, who, as I have been informed, has advanced a considerable way in the accomplishment of his object. I have seen some of these animals, which were purchased of him in order to be taken to Van Diemen's Land; with him I closely inspected them; and their appearance certainly warranted good hopes of a favourable result.

But I will no further press the argument, which I have founded upon these, as I consider, analogous cases; but I conclude with a hope that I may have led your Lordship to the consideration of some interesting points, which might not have occurred to you, and which, unquestionably, have a tendency to relieve me from the

imputation of being unwarrantably speculative in my attempt, as some persons may perhaps imagine.

Whether the sheep which I shall exhibit at the Smithfield show will come within any of the rules of the society, to admit them as competitors for a prize, I do not know. My object will be attained by submitting them to the examination of your Lordship and the public; at least, if I succeed, as I trust I shall, in obtaining your particular notice.

Believe me, my dear Lord, yours very truly,
Felix Hall, Dec. 1. WESTERN.

ON PERENNIAL GRASSES.

It has been a constant and universal remark, that of all the arts practised by mankind, none is open to greater improvement than that of agriculture, and, at the same time, it is always acknowledged that none progresses so slowly. The cultivation of the earth must take precedence of every other art—it affords the material of manufactures, and must be practised before they can exist—and, as it produces food and raiment, the indispensable requisites of life, it seems very natural to suppose that this primary art, the very foundation of natural and social existence, and of every comfort and enjoyment of civilized life, would be pushed to the utmost extent by every possible and known means. In producing this slowness of progress, no doubt many causes concur—causes incomprehensible and indefinable, arising from the course of events, and from that irresistible “something” in the current of human affairs, which seems to baffle all legislation on the subject, and to be absolutely beyond the power of human controul. These disquisitions are foreign to our purpose, as we only intend to call the attention of our readers to means within their reach. When we look at our books on agriculture, and our periodicals, our societies general and local, and the exertions of scientific men in aid of agriculture, we conclude, that the art has had more than a due share of anxiety evinced for its promotion; and when we read our weekly discoveries of new plants in shape of barley, wheats, cabbages, &c., we think that the farmer will soon be enriched from some hidden store of wealth. The value of many of these discoveries exist only in the sanguine imagination of the projector—exotic plants, and others forced by some adventitious circumstance to a very prolific growth, will soon become acclimated, and range themselves under the standard of production fixed by soil and climate. Mankind always expect too much; and, when some discoveries fail, conclusions are too hastily drawn against others. Among other discoveries and applications in agriculture, a knowledge more extended of the nature and uses of our numerous grasses, attracted attention, in order to ascertain if a greater number, and of greater value, could not be found for the use of the farmer. The late Dr. Richardson gave us many a long and flaming account of the value of fioren grass (*agrostis stolonifera*)—circumstances were overlooked, and the situations are few where it could be applied, and we now hear very little of it. The cultivation and relative examination of grasses were undertaken with great zeal by the late Duke of Bedford—the practical part was confided to Mr. Sinclair, his gardener, and the scientific to the late Sir H. Davy, one of the most illustrious philosophers of modern times; and they entered into it from the noblest motive that can influence a hu-

man being—a desire to reduce philosophy and the ostentation of science to the uses of life, for the benefit of the human race. The experiments made were on much too small a scale whence to draw satisfactory conclusions; and the chemical results will not be supported by practice in the quality of the grasses applied as food for animals, the only use to which they are applicable. But, notwithstanding all failures and discrepancies, owing to laws and combinations, of which we are ignorant, their labours form the greatest and most valuable step yet made in a most important branch of our modern agriculture. For, granting that the day is fast approaching when the cultivation of green crops will be much extended, many of our inferior soils are adapted for pasturage, and grasses will be of great value to the former. Having had many years experience of the most common perennial grasses for hay and two years pasture, on turnip and clay soils of inferior quality, I shall state the results as they appear to me, both in quantity and in the other qualities they seem to possess.

The farm where they were sown was under my practical charge, on the Duke of Portland's estate in Northumberland. The old leys rotted sheep, from the mosses and weeds they produced, and the weak arable lands were exhausted by a constant ploughing, under a four years' course, and when the scanty crop of hay was removed, the fields were nearly covered with that sure sign of poverty, the "common self-heal," or "*Prunella vulgaris*." The old leys and turfs were all ploughed up, and the whole farm, six hundred and forty acres, was thrown under a course of five or six years, two or three years in grass, according to the produce and appearance of the pasture in the second year; on all the soils, and especially on the very worst, the "cocksfoot," "*Dactylis glomerata*," was invaluable as a pasture grass, affording a fresh, an early, and abundant bite for sheep when no other grass has appeared; for hay it was equally productive, and maintained its superior usefulness so long as the pasturage remained. On rich lands, however, this grass, when sown for a crop of hay, grows very coarse and yields a heavy produce; bulk certainly cannot be got without some degree of coarseness; in that strong state horses refuse and pick it out, though our practice of cutting may obviate that objection. My observations led to the conclusion, that it is rather a pasturage than a hay plant. The "dogstail," "*Cynosurus cristatus*," took well on these hard barren clays, and during the second, and more especially the third year's pasture, it was nearly the only grass that seemed to thrive, evincing a decided superiority over the cocksfoot, in all cases where the soil was of a harder and drier tenacity; in every case it fully supported the high character given by Sinclair in the "*Hortus Gramineus Woburnensis*," and though its wiry stems are refused by cattle, and its foliage not very abundant, yet it is confessed by Curtis and others, that it affords a wholesome and nutritious food for sheep, and is found in the very best and soundest of our pastures; in autumn and in winter the superiority was most observable. The "catstail," "*Phleum pratense*," likes a damp and softer soil, and for hay is preferable to the two grasses I have mentioned, finer in quality than the "cocksfoot," and as ready in growth, and much more productive than the "dogstail," it failed as a pasture grass, either for early or late herbage; the arid and stubborn clays seemed too hard for its growth; on softer soils it

formed a principal part of the hay and aftermath. The "foxtail," "*Alopecurus pratensis*," was also sown at the rate of two or three pounds per acre, and on the best soils, possessed of moisture, it grew tolerably well; on dry and inferior soils it seemed unsuitable. Many of the seeds are abortive; in repeated experiments, the proportion of seeds that vegetated to those that did not vegetate, stood nearly as one to six. This grass is of excellent quality, and adapted both for hay and pasture, on rich lands that are moist and damp; in rich moist meadows it grows in great abundance. The "meadow fescue," "*Festuca pratensis*," likes a good soil, and produces abundantly; on the soils we cultivated it fell behind the "cocksfoot and dogstail." The "*Festuca duriuscula*" suits on a bare hard soil. The "*Avena*" was not sown, as we had no sandy lands in which it delights. The "*Poa pratensis*" and "*trivialis*" were both sown, and where the soil was loamy and moist, the "*pratensis*" grew well, the "*trivialis*" not so well; for both species our soils seemed too hard and poor, as the "*poas*" all delight in moist loams. But of all the grasses yet known to us, none can be compared with the "ray grass" for a crop of hay. It yields more weight per acre, and of finer quality than any other yet known, the bulk of both being taken into account; it affords an abundance of good seed at little cost, and it grows readily on a greater variety of soils than any other. For these reasons it will keep its ground in the four years' course, though on most soils a mixture of "catstail," "*Poa pratensis*," "foxtail," and "fescue" might be beneficial. But for two or three years' pasture, or for permanent grass, it is much inferior to many of the grasses I have mentioned; it inclines to run to seed and stem, and is deficient in root foliage, and requires a due mixture with the above-mentioned perennials for hay and pasture. In some situations it does not hold well after the first year, and clovers on such soils wholly disappear.

A most important improvement followed the introduction of these grasses, and the adoption of the pasturing system. The herbage never affording a bite for cattle, sheep were wholly used, and the number kept on the farm was increased every year. The land was improved by rest, better crops were obtained, especially of oats, from being sown on the fresh grassy sward of three years' duration. The then wet soils addicted to rot sheep, were fresh seeded after two or three years, in grass; not one instance of rot ever appeared among the improved Leicester sheep, as they had to eat fresh grasses in place of noxious weeds, the very thing that supported and saved them. Salt was also given them. Many old turfs and leys, lying at present in a disgraceful and useless state, might be quadrupled in value by a similar process; but our farmers are so besotted with prejudice, and enslaved by opinion, that they seemingly on purpose allow a part of the farms to lie in producing weeds to taint their flock, and plough and scourge the other part in attempting to support them, and when the evil is done, the blame is very gravely laid upon the land. If lands be well wrought and cleaned, a mixture of these perennials will produce a sward on any cultivated soils for grassing sheep with safety, if properly renewed. The chalky and sandy downs of our southern counties must be excepted, where, from the hot nature of the soil, and the influence of the sun, it might be impossible to clothe them with verdure, at least within a long period of time. The very hot burn-

ing sands may be most profitably managed by green crops and eating by sheep. The great and general mistake committed in sowing small seeds, is the want of cleaning and pulverizing the land. They should be committed to a surface of the finest tilth that can be produced, and pressed in by a roll to make a flat surface and to retain moisture. The want of success in laying down for permanent pasture has been greatly owing to this negligence, arising from the usual dread of expense. Too small a quantity of seeds is sown on an acre of land; in common cultivation, where produce and profit are required, a greater quantity of the most useful seeds should be sown, rather than the seeds of a number of the finer and of more doubtful success, lawns being excepted, and where a choice permanent sward may be required. On the hot sands I have mentioned, not less than 30 to 40lbs. of clover seed should be sown on an acre, to secure a close crop for eating on by sheep. To prevent waste by trampling by feet of sheep, green crops should be cut by hand, and thrown over the fence into racks. The saving will amply repay the labour.

Great praise and gratitude are due to the memory of the illustrious nobleman for the zeal displayed in instituting the experiments, and of the results, for the laborious perseverance in bringing them to a termination, and of the philosopher who devoted his time and his talents to benefit the cultivator of the soil. And though the greater part of such speculations and researches may never be applicable to the uses of life, yet that circumstance detracts in no way from the merit of the persons engaged in them; the motive is most laudable, the object in view most philanthropic; and some lucky hit, chance, or observation, may be the means of making some splendid discoveries which may amply repay for all former failures and disappointments, and confer an everlasting benefit on mankind. For most of the arts have been wonderfully forwarded by some such single discovery, which has accelerated its progress much beyond what might have been expected in a great number of years, and has introduced a new era into its history and application.

In the case of grasses, a great step has been made. They are placed before us for our choice; and for nearly twenty years I have never ceased using six or eight of what these results and experience taught me to be the most useful both for hay and pasture, with great advantage and unvaried success. In laying down permanent pastures, the directions and selections are excellent, and I have followed them successfully, with a little variation. The keeping of permanent pastures is a very problematical question. When our wet lands are once improved by the modern system of draining, if the improving "do not" render these soils capable of producing green crops, it will at least facilitate the execution of the present system of cultivation, render the lands more accessible at certain seasons, increase the produce, and render them more adapted for the mixed system of cropping and grazing by artificial pastures of perennial grasses, which constitutes the best and most profitable mode of cultivation practised in our present knowledge of the art. CULTOR.

—*Gardener's Gazette.*

CHRISTMAS OF OLD.—An account of Admiral Russel's punch-bowl, and of his noble treat at Cales, alias Cadiz, in Spain, on Christmas-day, in the year

1695, according to the relation of Dr. Oliver, who was present at the entertainment:—There was in the middle of a garden of lemons and oranges (which garden belonged to Don Pedro Velasco, Governor of Cales) a fountain which was set with Dutch tiles in the bottom and sides, and was made as clean as a Japan punch-bowl. In this fountain, on Christmas-day, was poured six butts of water, half a hogshead of strong mountain Malaga wine, two hundred gallons of brandy, six hundred weight of sugar, twelve thousand lemons, and nutmegs and sugar in proportion. The Admiral hired the governor's house, belonging to the garden, and resided there all the winter. He invited all the English and Dutch merchants and officers, belonging to the fleet to dine with him; there was one hundred dishes of fresh meat, besides many other dishes of rarities; but such a flesh-feast was never seen in Spain before. He also roasted an ox for the entertainment of the company. Dinner being ended, they marched in order to the fountain, or punch-bowl, where on the punch was floating a little boat with a boy in it, and cups to serve it out to the company. The Admiral began the allies' healths; and having drank what they thought fit, they drew off, and in went the mob, with their shoes and stockings and all on, and had like to have turned the boat, with the boy, over, and so he might have been drowned in punch; but to prevent further danger they sucked it up, and left the punch-bowl behind. This is a comical but a very true relation and worth noting.—*From Moore's Almanack of 1711.*

HOW TO PRESERVE POTATOES.

TO THE EDITOR OF THE TEN TOWNS' MESSENGER.

SIR,—Having seen in your paper of Friday last, a hint how to preserve potatoes through the winter, which was strictly correct, so far as keeping them in cellars go; but as, generally speaking, the poor people are obliged to keep their potatoes in Tumps, perhaps the following additional hints may be of some little service to those who have not the convenience of a dry cellar. When the potatoes are ridged up, ready for covering, let a little straw or dry fern be spread over them, after which let a foot thick of earth be added, chopped, or otherwise rendered as fine as coal ashes; let neither a foot tread it, nor a spade beat it, but leave the whole as light as the soil will admit of; but where the soil is naturally stiff, a greater thickness of it must be added, and the sides of the ridges to be left as steep as possible, and the lighter the soil is put on, the more frost will it keep out. The reason is obvious enough, for when light soil is laid on steep ridges rain never enters deeper, perhaps, than two or three inches, it being held in a kind of solution with the fine earth, by capillary attraction; or, in other words, the air in the light soil keeps the rain from sinking, consequently it runs down the sides of the ridges, and keeps the interior of the mass as dry as possible, and, of course, the frost never enters to any very great depth. When the soil is trodden, or otherwise made firm, the air beats out of it, every drop of rain enters, and sinks through the whole mass, then Master Frost takes liberty to follow, vowing vengeance to Mr. Murphy. I preserved some hundred bags of potatoes through the last extraordinary winter, as above advised.

I am, Sir, yours obediently,
JOHN PEARSON.

Kinlet Gardens, near Bewdley. Nov. 14.

Sprats (*Clupea sprattus*) abound on the Norfolk, Suffolk, Essex, Kentish, and other coasts, and afford, during the whole of the winter, a cheap supply of food to both rich and poor. "The largest quantities are taken when the nights are dark and foggy. From 400 to 500 stow-boats are employed during the winter. Many thousand tons in some seasons are taken and sold at 6d. and 3d. the bushel, depending on the supply

and demand, to farmers, who distribute about 40 bushels of sprats over an acre of land, and sometimes manure 20 acres at the cost of 20s. an acre. In the winter of 1829-30 sprats were particularly abundant; large loads, containing from 1,000 to 1,500 bushels, bought at 6d. a bushel, were sent up the Medway as far as Maidstone, to manure the hop-grounds. Notwithstanding the immense quantity consumed by the 1,500,000 inhabitants of London and its neighbourhood, there is yet occasionally a surplus to be disposed of at so low a price as to induce the farmers, even so near the metropolis as Dartford, to use them for manure."—*Yarrell's British Fishes*.

REMARKS ON DRAINING LAND, WITH A DESCRIPTION OF THE MOLE-PLOUGH BROUGHT FROM ENGLAND BY HIS GRACE THE DUKE OF HAMILTON.

BY MR. AITON, HAMILTON.

(From the Quarterly Journal of Agriculture.)

Draining of land was, till lately, restricted to the opening of outlets for springs that oozed from under the surface of the ground, and rendered the soil where it rested damp or marshy; but that subject has already been so often, and so amply treated of, that it need not be resumed here. Every piece of marshy land requires to be drained in a way adapted to local circumstances, of which, intelligent farmers and labourers are qualified to judge. And in all the arable districts of Scotland, by far the greatest number of marshy patches of ground have been already drained, and every year some of those that remain are laid dry. Much was for some time said and written about Mr Elkington's discoveries, by which springs and stagnated water, forming marshes, were carried off, by merely boring a hole, or sinking a small pit in some particular place, to let the moisture sink from the soil to some under strata of gravel, sand, or other permeable matter, through which it could pass to some other outlet. And in other places, the water pent up under the soil was brought to the surface, and the marshy spot laid dry, by tapping or boring a hole from the surface to where the water was lodged. But however well these modes of draining might do in some districts of England, where the strata are little disturbed, and lie nearly horizontal, in Scotland, where the strata under the soil are generally much distorted, Mr. Elkington's wimble can seldom be used to advantage, and nothing will do but drains filled with stones, tile, &c. through which the water can percolate. The wimble has therefore been but seldom used in Scotland.

The only other method of draining land, that seems necessary to be noticed is that of *furrow-draining*, recently introduced into Scotland, by his Grace the Duke of Portland, and now fast extending over all the arable districts of the kingdom. As this is one of the most important improvements ever introduced into the science of husbandry, and as some diversity of opinion still prevails as to the best methods of conducting it, I feel inclined to offer a few remarks on the subject, as well as to describe a draining or mole plough, that has recently been brought by his Grace the Duke of Hamilton, from the county of Suffolk, to his estates in Scotland, and which seems to merit attention.

It is well known to every intelligent farmer, that the greatest hindrance to the prosperity of agriculture, and the most serious injury done to the crops of grain, roots, &c. arises from the climate; and especially in the western districts of Scotland, where the fall of rain is copious, and the time it occupies in falling is greater than on the eastern parts of the island. Where the soil is so permeable to moisture, that the rain water can percolate and find a ready outlet, the superabundance of moisture that falls in rain or snow does little injury to the land or the crops, farther than by carrying away part of the finest of the mould. But where the soil is chiefly composed of clay, loam, or soft earthy matter, the superabundant moisture, having no ready outlet, remains loitering in the soil, and forms it into mortar,—chills the herbage, banishes the richest grasses, or renders them stunted, and raises coarse subaquatic plants, that are neither relished by, nor nutritive to live stock. Wherever the *Carex panicea*, or others of that family, set up their blue coloured foliage, they serve to point out to all who see them that the soil is overcharged with moisture, and ought to be furrow drained. We have not yet discovered the means of preventing an over quantity of rain from falling. The cold blast will blow, and the rain and snow will continue to fall, even to an injurious extent. But when the soil is improved by culture, enriched by manure, and opened to receive and carry off the rain-water as it falls, it will not be so much injured by the weather, because the temperature of the climate will be in part ameliorated.

It has been ascertained beyond controversy, that, when clay-soil that would bring 20s. of yearly rent has been effectually furrow-drained with small stones or tiles, it will repay the expense of draining, from the additional produce obtained from two or three crops, and the land better worth 30s. than it was worth 20s. per acre of rent before being drained. I know of instances where tenants have furrow-drained parts of fields of clayey soil, and the first crop of potatoes amply refunded the expense of draining, (about 5*l.* per acre,) beyond the return of such parts of the same field, every way similar, and manured and dressed equally, that had not been furrow-drained. And it has been found, that where strong clay soil has been so drained, that it can be green-cropped and drill-cropped the same as sandy dry land. Such being the case, it must be great misconduct in any proprietor of such land, and especially if it is situated on the western parts of the island, to allow any part of his property to remain undrained. By draining such land, employment is carried out for labouring people, the ground rendered from one-fourth to one-third part more productive of human food.

When the Duke of Portland began draining on his estates in Ayrshire, he had difficulty in getting the tenants to pay 5s. per acre additional of rent, as interest of the expense of draining. But in a few years after they all struggled with each other for preference, and were quite ready to pay the additional rent. His Grace has not exacted more than five shillings per acre where the land was under lease; but when the current leases expire, he will get twice that sum of additional rent, above what the land of equal quality that has not been drained will yield.

I have always been afraid that where fourteen or fifteen inches of clay soil was laid over the tiles, which is done to prevent them from being broken or deranged by the feet of horses or the plough, there was danger that the clay would, after a few years, become so compact above the tiles, that the water on the surface of the ground would not find its way to

the conduit formed by the tiles, but remain stagnant on the soil above them, and render the drain in some measure nugatory. To prevent this, and secure to the water a free passage to the tiles, I have often suggested the propriety of mixing with the clay a portion of gravel, sand, coal-culm, or other such matter as would give free vent to the water from the surface to the conduit at all times. The people in Ayrshire, however, seem convinced that my fears are unfounded, as where the drains were formed upwards of a dozen years ago, they are still answering as well as at first. I shall be glad to find that they may always prove efficient. But I must mention that no drains in clay soil will draw beyond six inches, the surface water must therefore find access into them from under the plough furrow.

I am of opinion, that when the drains are dug to the depth of fifteen or sixteen inches, and only two or three inches wide at bottom, well cleaned, and filled four or five inches with stones, broken as small as Macadamized road metal, with three or four inches of sand, gravel or coal culm above the stones, the drains may, where stones abound, or rock is near at hand, be executed at less expense, and prove every way as effectual, or even more so, than where tiles are used; and I find that many intelligent farmers concur in this opinion.

Some have formed drains with turf, generally termed wedge-drains. These are certainly the least costly of all drains; but in clay soil, the wedge of clay, trod firm into the drain, must prevent the water from sinking to the conduit below; and if the wedge is not made firm, or if the soil and subsoil abound with sand or small stones, the conduit will soon fill up and the drain become inefficient.

The only other mode of furrow-draining that I have heard of, is forming and completing the drain with something resembling a plough, termed a mole-plough; and as one of these, formed on the most improved plan of any I have ever seen, has recently been put in operation on the estate of his Grace the Duke of Hamilton, and is expected to answer the purpose of draining at a very moderate expense, it seems highly proper that an account of this improved implement should meet the public eye, so that proprietors and occupiers of land may judge how far it merits attention.

The beam of the mole-plough is eight feet long, strengthened with iron on the under side, and having two handles behind, by which it is guided. A plate of iron, ten inches broad, one inch in thickness, and about twenty inches long, is fixed into the beam by iron wedges, like a coulter, and it can be let down or drawn up to make the conduit for the water farther or nearer to the surface of the ground at pleasure. On the lower end of this plate, the mole, or conical shaped sock, about eighteen inches long, three inches deep, and two and a half inches wide, is fixed; and which, when the plough is moved forward, forms and leaves open a conduit to carry off the water that may fall into it from the surface, by the slit formed by the broad plate of iron, which is thinned away in the fore edge. A slight furrow slice is generally cut by a common plough, in the direction in which the drain is to be formed, and which may be replaced when the drain is finished; and as the sock is generally fixed at fifteen inches from the beam, and as the beam moves in the furrow cut by the common plough, the bottom of the conduit is about eighteen inches below the surface of the ground; but this depth can be altered by raising or lowering the plate in the beam, as has been mentioned.

The apparatus by which the mole plough is moved consists of a strong platform of wood (well support-

ed with iron) six feet long, and four broad, surmounted on four wheels, one at each corner, those before being thirty, and the two behind, twenty inches diameter. A capstan is placed in the middle of the platform, having its upper axle fixed in a strong beam of wood, supported by bars of iron at four feet above the platform. The capstan is four and a half feet in circumference, eighteen inches in length or height, and is moved round by two horses by a shaft placed horizontally on the axle of the capstan; and by means of a strong chain, 58 yards long, and weighing eight and a half hundred weight, brings up the mole-plough to within two or three yards of the platform, by 22 circuits of the horses, and which they make generally in twelve minutes; and as the platform can be removed to a new station in the space of three minutes more, a drain can be formed about 210 or 215 yards in length every hour.

To keep the platform firm in its place, a strong piece of timber, having a prong of iron, is fixed by a hinge to each of the two hindermost corners of the platform, and which, pointing diagonally, sinks into the ground whenever the horses are put in motion. There are besides two anchors at the fore corners of the platform, which keep the platform from being moved backward by the draught of the chain, which draws up the plough at the rate of fifty-five yards in twelve minutes. So that, with two horses and three men, this plough can be made to form a drain in every furrow of an acre of land, where the ridges do not exceed fifteen feet in breadth, in the space of seven hours or thereby; which is certainly the most speedy and least expensive mode of furrow-draining land that has yet been invented.

It appears to me, however, that although the conduit formed by the plough may generally remain open for a good many years and its dimensions may be sufficient to carry off all the water that can ever fall into it in ordinary weather; yet I am afraid that the slit formed by the broad plate of iron between the surface of the ground and the pipe, being only one inch wide, may in a short time, from the vicissitudes of the weather, and pressure of the feet of cattle, collapse, so as to prevent the water from having free access from the surface of the ground to the conduit; and if so, the draining would be rendered nugatory. If the mole-plough is put in motion in very soft clay, the slit will not remain open for even a single day; and though it may remain open for a time it will close whenever the clay is drenched in moisture. It can only be used in clay-soils, and to the greatest effect in old pasture land.

It is fair however, to state, that it is well attested, that the land drained by the mole plough in the county of Suffolk several years ago, has more than answered the expectations formed of its utility. As that on the Hamilton estate was only drained last spring, all that can be said respecting it is, that the drains are in general open, and discharging water that could not fail to injure the soil; although in some few places the conduit has been obstructed, and the water has burst up to the surface. The season having been wet, the sedge grasses are still growing over the drains; but some who know the ground well, think the herbage is of darker colour than formerly.

TO LANDLORDS.—I invite the attention of young landed proprietors to a subject on which their *incomes*, as well as the *national prosperity* depends. The Highland Society has offered their gold and silver medals without limit as to numbers, to travellers who may *notice* and

report improvement in rural economy abroad. And these prizes seem most judicious, the value of such medals may be small, but to those in easy circumstances the stimulus may be great; a blue ribbon is of little intrinsic worth, and yet it probably has led to much useful exertion to merit the distinction. Sea birds are shot by sportsmen who do not even stoop to pick them up, the pleasure arising from the skill shown in aiming well being the sole reward of a toilsome day's work. How much more interesting then may it prove to an intelligent youth to notice the customs of the countries he travels through, with the view of his report placing him amongst the benefactors of his native land. A domestic affliction which befel Sir J. Sinclair, induced him to travel, disinclined him to dissipation, and led him to observe the agriculture of the continent—and to form acquaintance with such distinguished persons there as could assist his future researches. And, in endeavouring to confer benefits on others he recovered his own spirits and activity. And the Highland Agricultural Society bears grateful testimony to the extent of his services in promoting improvements, which South Britain is now endeavouring to emulate. J. S.

ON THE IMPROVEMENT OF GRASS LAND.

[A letter from Lord Western upon this subject has recently been published by Ridgway; we give the following extract from it, and strongly recommend the perusal of the whole to our readers as containing much useful information.—Ed. F. M.]

The system I advise and practice is, in the first place, studiously to drain off the springs from out of the earth by deep under drains (no open gripps), and then lead them by various means, according to the form of the ground, and as far as the levels will permit, together with every drop of flood water that can be collected, on and over all pasture lands; not allowing the water to hang certainly, far from it; on the contrary, care must be taken that it shall be in constant motion, and have free passage to go off; the slower it moves perhaps the better, because it deposits more of the sediment it brings with it. This sediment is the finer and softer mould of the fields, from whence it comes; in this country it comes loaded with richness from our fallow fields, and is more efficacious even than the dung cart in giving permanent value, whilst vegetation is hastened, and a beautiful herbage is produced much earlier than in grounds not so treated.

The means adopted to lead the water on and over lands, are not easy to describe. I must refer you to the various authors who have treated the science fully, and to whom I would wish you to have recourse; but the practical man will learn more in an hour, by seeing and examining the work that is done, than by weeks of study. Where the lands lay naturally sloping ever so little, catch work, as it is termed, is always easy; here the *springs* or *floods* are caught and turned, as the natural variations of level will admit. Flat meadows must be thrown into artificial inclined planes, like a *wide land*, or *stetch* of twelve or sixteen furrows, the water being led along the middle, which is the highest part, in a small channel, overflowing the lips of it regularly as it goes, and trickling down the inclined plane on each

side into drains resembling the *stetch* furrows; and this, when there is a stream flowing abundantly summer and winter, I shall call *irrigation*, as distinguished from catching of springs and floods, where the ground is naturally formed into such inclined planes as admit of its being done. We have then *irrigation*, *catch work of springs* and *flood water* combined, *catch work of springs alone*, and *catch work of winter floods alone*; and here let me observe, that the catching of winter flood water only may be accomplished very often, and almost always with great facility. I hardly know a farm in which some opportunity does not occur of rendering flood water available; and of its utility one experiment will suffice to satisfy the most incredulous. The quality of soil makes no difference, because all are benefited by the accession of fine mould, of which these floods are the carriers; and none are injured by *flowing* water.

Catch work consists simply in diverting the natural course of the water, and leading it in one *less* rapid: that which you choose for it must be, indeed, falling, but as near a perfect level as will suffice to keep the water on in constant gentle motion; then, by putting a little stop (a spade full of earth) in this new channel, here and there, it will flow over its lips generally, and water gradually the space between it and its *natural* channel. To find this *new* channel, if the case is difficult, an experienced man with a spirit-level must be employed: in common cases, to catch spring or flood water, it may be done by an expert husbandman, who is accustomed to drainage, and has an accurate eye. I have, in some instances, found it practicable to set in a ploughman with a pair of horses, directing him to fix his plough in the natural water-course, and take his line in any direction that appears the nearest to the level where he stands, without making it an absolute and perfect level; he must work out his furrow, however circuitous his course may be, in such direction as that the water shall slowly follow him as he goes. His course will, indeed, often be very curved, according to the variations of the level of the ground. But this circumstance must not be regarded; he must follow this sole and simple rule, nor will any loss of ground or injury to the meadow follow. The bottom of this channel must be enlarged and finished with the spade, and will be coated with grass soon, and fed when the floods are gone, or the springs let off again. I can shew an instance, of which there would be many, no doubt, where a meadow has thus been managed, and flood water effectually laid on, at the expense of a few shillings. The beneficial effects are *immediate* and accumulative, if I may so express myself; each successive year increasing the store of wealth thus annually brought. I have one channel thus formed not six weeks ago,* which, watering a piece of grass land, exhibits at this moment, in a most striking manner, the influence merely of our *last* floods; the herbage shooting forth so much more vigorously, thick, and beautiful, than in the part of the field not watered. I do not say in poor sandy countries the floods would be so *immediately* productive, nor, indeed, at any time so productive as here. This is the county of all others in which they must be most charged with value, from the extent and quality of our arable lands; accordingly, I say, we of all others should adopt and would benefit by the practice.

* Written in May.

NEW BREEDS OF SHEEP.

IMPORTANT AGRICULTURAL MEETING AT MARKETHILL.

COPY OF A LETTER FROM C. T. TOWER, ESQ., TO EARL SPENCER.

Weald Hall, Dec. 15, 1838.

DEAR LORD SPENCER—My friend and neighbour, Lord Western, in his letter to you of recent publication, propounds three modes, by either of which he states a new breed of sheep may be created. Having had considerable experience for many years in breeding Merino sheep and crosses from it, I am induced to trouble your lordship with the following remarks as applicable to some, if not all those modes. In 1810-11, I imported from Spain a considerable flock of Merino sheep. I also, with a view to an experiment with our native breeds, purchased through the late Mr. Ellman, of his Grace the Duke of Bedford, a number of Southdown ewes, and crossed them with a Merino ram. In each successive year, I put the produce to another Merino ram, and in the course of eight or ten years that stock became so identified, both in appearance and every other quality, with the pure stock kept, and fed together, and distinctly ear-marked as lambs, that in few instances could any difference be discerned in them. Finding this, therefore, to be only a circuitous mode of getting back to the Merino breed, I determined about six or seven years ago on another experiment, the object of which was to give permanence to that breed, which would better unite the properties of a fleece far superior to any of the British breeds would yield, on a carcase more readily disposed to receive fat than that of the Merino breed of sheep. For this purpose I obtained from a friend a handsome ram, half Leicester and half Cheviot, which, being put to some Merino ewes, produced excellent lambs. From this first cross I then selected the best rams, and by putting them to the same breed of first crossed ewes, established a distinct and valuable sort, which I then termed *creating* a new breed of sheep. It is quite clear, that as long as a similar course is pursued, similar results must follow. To give uniformity to any breed so established, it is obvious that the greatest care must be taken in the selection of stock for breeding, rejecting every peculiarity that does not harmonise with the general character of sheep you wish to establish, more especially in the rams. To avoid degeneracy from breeding in, and in the adoption of it rather extensively by breeders will become essential, otherwise recourse must necessarily be had again to the *original combination*. Being a breeder, and not a feeder, I regret that I have it not in my power to exhibit at this show any fat carcase worthy of the public eye. Indeed, my park being close fed with deer and abundance of other stock, and by no means of good quality, affords only a state of store condition to my flock, ill adapted to be placed any where near those gaudy carcasses, by which this exhibition is ornamented. If your lordship, however, or any other agriculturist, will do me the honour to inspect these sheep, they will see some useful, pretty framed sheep, whether for upland or lowland, carrying fleeces well adapted for fine combing purposes (a description of wool very much in demand), grown on hardy sheep, with carcasses little affected by their affinity to the Merino breed; a breed of which it must fairly be admitted that, however delicious the mutton and invaluable the fleece, a natural tendency to obesity is not its distinguishing characteristic.—I am, my dear lord, yours very sincerely,

C. T. TOWER.

To the Right Hon. Earl Spencer, &c. &c.

(ABRIDGED FROM THE NEWRY TELEGRAPH.)

Lord Gosford's Farmer's Dinner was held here (Markethill), a few days ago. The tempestuous state of the weather prevented many gentlemen from a distance attending; and the absence of Colonel Close, of Drumbanagher, of Mr. Mitchell, of Carrickmacross, agent to Mr. Shirley's extensive property, and of Mr. Rose, an eminent improver from the neighbourhood of Monaghan, were particularly regretted, much practical information having been expected from the latter gentleman upon one of the subjects discussed—the advantage of furrow draining.

The lion of the day, however, was Mr. Van Buren, son to the President of the United States, who honoured the meeting by his presence, anxious to add to his knowledge of the highest society in this country, an acquaintance with the habits, manners, and modes of thinking of the middle classes, those who form the soul and substance of the State. Among the other strangers, those most distinguished were Mr. Mollony, a gentleman of property in county Clare; Mr. Boyd, of Ballymacool, county Donegal; Mr. Taaffe, from county Sligo, and Mr. Jamieson, manager of the Waste Land Company's estates, in that part of Ireland; Mr. Milne, agriculturist to Colonel Close, one of the Judges; besides some of the principal tenants on Lord Charlemont's and other neighbouring estates, Mr. M'Anally, and several of the gentlemen of Markethill, and the chief tenants on the Gosford Estate, who, together with the successful candidates, are always included in the invitations by his Lordship's desire.

The Earl of Gosford, who presided, addressed the company, and alluded to the standing rules of the meeting—that no controversial or political subjects should be introduced, nor any toasts proposed not sanctioned by the Chair. His Lordship concluded by giving the health of "Her Gracious Majesty the Queen, with long life and good health to her and those who wished her well." After which followed the usual standard toasts of "The Duke of Sussex and the other branches of the Royal Family,"—"The Army and Navy"—and "Lord Lieutenant and prosperity to Ireland." His Lordship then called the attention of the company to the unusual circumstance of having so distinguished a stranger present as the son of the President of the United States of America, from whom he (Lord G.) had very recently received the kindest reception during his short stay at Washington, where, nevertheless, he had had full time to satisfy himself of the friendly disposition, uprightness, integrity, and sincerity of the government; and, also, to observe the kind feeling almost universally existing towards these countries. He trusted, therefore, the company would receive, with the greatest satisfaction, "The health of Mr. Van Buren, President of the United States of America," in whose son he was happy to trace the same talents and friendly dispositions by which his near relative was so highly distinguished. This toast having been drunk with the greatest enthusiasm,

Mr. VAN BUREN, jun., returned thanks to the noble Chairman for proposing, and to the company for the cordial manner in which they had received, this sentiment; and concluded by proposing, "The health of the Earl of Gosford."

The Earl of Gosford, having returned thanks in the most feeling manner for the compliment paid

him by Mr. Van Buren and the meeting, concluded by calling on Mr. Blacker to proceed with the business of the evening by reading out the premium list, and calling upon the successful candidates to state, as usual, the benefits, if any, which they had received under the change of system in their mode of cultivation.

Mr. BLACKER then rose, and, addressing his Lordship, mentioned that the practice had been not to continue premiums to those who had already obtained them for three succeeding years, as they ought then to be sensible whether the plan recommended was or was not worth pursuing for its own sake; without which was the case, to give premiums to introduce it would only be money thrown away. He then read over a long list of names of premium men, who are now only entitled to certificates; and also many others, who, though in a higher rank than to claim premiums, were distinguished by their adoption of the new system from conviction. He then mentioned that all the candidates for the best cultivated farms, being in what is termed the four-course rotation, the judges had been directed to give a preference to those who had the best provision for the winter feeding of their stock, and also the more eminent exertions of the individual in arriving at his present state; and after cautioning all the parties to be careful not to state anything which they could not fully substantiate, if called on next day, which might probably be the case from so many strangers being present, he declared Mr. James Bradford, of Druminnis, as entitled to the first premium for best cultivation, on a farm of 5 acres and 3 roods, in which there was considerable waste by roads, and the rent 6*l.* 12*s.* 8*d.*

Mr. BRADFORD's health being drunk, and success to his exertions, he came forward in the room and stated that, in the year 1829 (before Lord Gosford purchased Colonel Graham's estate, on which he lived) he was in a heavy arrear of 21*l.*, owing to a fever which had attacked himself and a young family, and had disabled him from paying off what the former occupier had left due on the farm, which was then only 2½ acres; that he was so reduced he had been obliged to borrow 30*s.* from the late curate, Mr. Lofty, to keep his family from starving; that ever since he had come under his Lordship, and had adopted the green crop system, he had been gradually improving in his circumstances. He had paid off his arrear and his other debts, and had nearly cleared off the purchase of better than three acres more land. He had, besides, made his house comfortable, and had laid out about 10*l.* worth of lime since then upon his land, and had got two good cows and two good pigs, whereas in 1829 he had no stock of any kind; and added, that upon a former occasion he had made something of a similar statement, which he was now glad to repeat before his Lordship—only this was better—as he was yearly improving, and he had quite given up sowing one grain crop on the stubble of another, which he strongly recommended every other farmer to do. He concluded by saying he humbly thanked his Lordship and Mr. Blacker for their kindness, and Mr. Bruce* for his instructions.

His Lordship here recommended all occupiers of land to attend to Bradford's example—to leave off the practice of sowing grain crops in succession, and concluded by giving as a toast, "Alternate cropping, the farmer's surest profit."

* The agriculturist for the instruction of the tenants.

Mr. ROBERT MITCHELL, of Drumbee Cross, having been announced as having obtained the second premium for best cultivated farms, next came forward; his farm being 14 acres, at a rent of 14*l.* 18*s.* He stated that, in the year 1833, he had but one cow, and an indifferent horse, and his rent then was only 8*l.* 16*s.*, and he was in 8*l.* of arrears; but now, in the year 1838, by changing his mode of cultivation, he had three cows, one heifer, and one calf, and a right good young horse; that he had paid off full 50*l.* of old debts and all his arrears, besides laying out 12*l.* worth of lime; and that, whereas he formerly had scarce two acres of potatoes, and those, from the want of stock and house feeding, badly manured, he now had four acres of potatoes and three roods of turnips, right well manured, and he could pay the advanced rent without trouble, as the company might well believe when he told them, he could, of late years, sell from 40*l.* to 50*l.* worth of produce off his farm, when formerly he could not sell more than 10*l.* to 12*l.*

His Lordship here observed, that the company might readily imagine the comfort which Mitchell and his family must enjoy, now that they were free from debt, and were receiving so much better a return for their labour, and he thought they would all drink, with pleasure—"Peace and plenty to Mr. Mitchell, and long life and good health to enjoy it."

Mr. BLACKER here pointed out that Mitchell was a strong instance of the truth of what he had always stated—that the man who grows the most turnips would always be able to plant the most potatoes, for the turnips not only gave plenty for their own cultivation, but a great surplus also to be given to the potatoes. Mitchell had formerly, when he had no turnips, only two acres of potatoes, badly manured, and now he had four acres, well manured, and nearly an acre of turnips besides. Many people he had seen who, after first getting into a stock of manure had been foolish enough to rob the turnip crop of its proper share, and put the whole under potatoes. This was like robbing the nest of the nest egg; and of course they fell back the following year, as might be expected, and the second start was always more difficult than the first, except when clover, by house feeding, brought another trial within their power.

Mr. Samuel Loudon was then called forward as getting the third premium. Mr. Blacker introduced him to his Lordship as a most industrious tenant, and a most thankful, contented, cheerful fellow, whose farm it was a pleasure to visit; that he understood he had more than his rent by the sale of his butter, but that it would be perhaps more satisfactory to hear the account of it from himself—he would only add that he held nearly 8½ acres, and paid 9*l.* 18*s.* rent.

Loudon then confirmed what had been stated as to paying his rent by his butter; said he had now two cows in place of one as formerly, and would be able to keep a third next year. He said he had been frightened at seeing Mr. Bruce as if he had been a *boggleboo*, the first time he came to him, but now was glad to see him, and he wondered at his own stupidity, and freely acknowledged all his former obstinacy and ignorance, and said he was now well content. He had a right good crop of oats, two excellent pigs that would be fit to pay the rent if he had nothing else to do it with; that he had increased his potato crop since last year one acre, and had no more to say but that he was content and happy, and most grateful to his Lordship and those under him.

Mr. BLACKER said, that if some of the company were surprised at what they had just heard, he had another case to bring forward, which would surprise

them still more, and called upon Robert M'Cammon, who was one of those in the list of persons who had already obtained three prizes, and asked him if it was true what he had heard, that he had sold 7*l.* 10*s.* worth of butter, made from the milk of one cow, since November, 1837?

M'Cammon upon this came forward and said it was true enough, that he had a cow which had calved at November, he had plenty of turnips to feed her with, and had sold, in Armagh, from that time to the present, 180*lbs.* of butter, at an average of 10*d.* per pound, which was just 7*l.* 10*s.*

Mr. BLACKER here said that he could not help calling attention to the great return which a cow might make if well fed and taken care of. M'Cammon had only three acres of land, and his rent was 3*l.* 10*s.* He had, therefore, it appeared, made more than double his rent by his cow, besides having the buttermilk for his family. If M'Cammon's cow had not been well fed on turnips, she would not have given one-half the milk she did; and, in place of giving, perhaps, sixteen or seventeen quarts of milk, worth 2*d.* a quart, or 2*s.* 8*d.* per day, she would soon have fallen off to six or seven, and ultimately, would scarcely have paid for her keep upon straw alone, and the farmer would have only a half-starved animal to *look at*, without any thing from her produce to *put in his pocket*. Mr. B. here observed that time was wearing on so fast that he did not like to occupy the company too long upon any one subject, as there were other important discussions to follow. He would, therefore, omit to call on the remainder of the premium men in the class of best cultivated farms, and merely say of Mr. M'Cutcheon, Mr. Beatty, and Mr. M'Parlan, the remaining successful competitors, that there could not be better labourers, or more thriving, industrious tenants, any where; and he would only venture to trespass on the meeting to pass a remark on M'Parlan, who would have ranked near the top, in place of being last in the list, if he had not neglected his turnip crop. The experience of this season, which had been so unusually wet, would show to those who had heavy clay land, that it was better not to stir the ground, particularly where horses were used, during the wet weather; and it would likewise shew them that the turnip crop need never be despaired of, if there were plants enough in the ground, and the crop put in in *good time*. A crop might be good once, in a dozen years, though sowed *late*. But the thing for a farmer to consider was not what in an accidental season *might succeed*, but what in any season *was sure not to fail*. There was always, in the wettest seasons, some dry interval in which the cultivation of a turnip crop might be attended to; and there were many instances of worse crops than M'Parlan's having been recovered by care, and were now most luxuriant. Mr. B. here produced a small instrument with three teeth, made like a rake, (or drag for weeding hedges), and fastened into the handle of an old reaping hook, which he mentioned to have been of the greatest possible utility in stirring the ground between the plants, in the drill which the rain had beat into a solid mass, and the horse hoe could not get at; it cost only 2*d.* or 3*d.*, and had nearly doubled the produce on some plots, being applicable where the crop was so far advanced as not to admit of any other implement—and it was the most expeditious and useful little implement that could be imagined; and by going backwards, when using it, and holding on one side, with one hand, the leaves of the plants, whilst the ground was loosened all round them with the other, the earth was left as open and free from weeds as the day the

drills were formed. He also praised very highly an improvement in the pony plough, invented by Mr. Bruce.

HIS LORDSHIP here mentioned the importance that was attached to the turnip crop by his tenants in Suffolk, where, to attempt to hold land without the turnip manure, would be considered an absolute absurdity. He then gave, as a toast, "A speedy increase to turnip husbandry." After which he briefly, but in a very complimentary manner, proposed "The health of Mr. Van Buren, their distinguished guest."

Mr. VAN BUREN replied in a manner very gratifying to the company, by saying that he had so many Irishmen fellow-citizens in the United States, he almost considered Ireland as his country, and certainly felt himself very much at home amongst those who surrounded him. However, as he had already trespassed very much on their attention, he felt it would be justly punishable if he repeated the offence, and would, therefore, merely confine himself to simply thanking his Lordship and the company for the honor they had done him.

HIS LORDSHIP now called on Mr. Blacker to proceed with the list of successful Candidates for best turnip crops, upon which it appeared that Mr. J. Cochran was entitled to the first premium.

On his health being drank, Mr. C. fully confirmed the benefit to be derived from the turnip crop, and said he had increased his quantity every year since he began, and would not be without them on any account.

Jacob Albin was next called forward as being entitled to the second premium for best turnips, who said he had lately bought the farm he was in, containing nearly 6½ acres, for which he had paid 70*l.*; that last year he found so much benefit from the turnips he had, that he bought as many as he could get from those who had any to dispose of; that this year he had sown more, and would have enough for himself; that he was increasing his potatoes as well as his turnips, and had now actually as much manure as people he knew with 22 acres, in other parts of the country.

Mr. BLACKER here again apologized for taking up so much time with the Premium Lists, the details of which, however, he thought would be gratifying to all those present; but he would now, with his Lordship's permission, pass over the remainder of the names, with only a passing remark as to their being all most deserving men. He then read out the names of James M'Connell, of Cornecrew, entitled to 3rd premium for best turnips; William Campbell, of Argonnell, 4th premium; Robert Maxwell, of Argonnell, 5th premium; and John Beatty, of Cornecrew, 6th premium; and concluded by proposing "The healths of Mr. Milne and Mr. Bruce, the Judges."

Mr. MILNE rose and spoke as follows:—

My Lord and Gentlemen,—Having had the honor of being appointed by you this year, as on former occasions, one of the Judges for the premiums on Lord Gosford's estates, I am happy to state that the improvements are still increasing, with the people's anxiety for the same; and likewise, their anxiousness for a succession of green food for Winter. Having seen the benefit of such in visiting their farms, I was surprised to see so many fine fields of turnips, after such a wet season. In regard to the Drumbanagher estates, I am doing my utmost to improve the appearance of the country, by advising the tenantry to dispense with all their crooked inside fences; and, by the encouragement given by Col. Close and Mr. Blacker, in allowing premiums and

other assistance, there is a daily advancement making in this and the squaring of farms, &c. The system of house-feeding and green crops has increased considerably this season; and by this practice I find very few but are able to manure the fourth or fifth part of their farms each year; likewise, more attention is paid to the Winter saving of the clover, &c., and the ploughing up land intended for potatoes and turnips before the Winter frost.

The Vice-President, Mr. M'ANALLY, then proposed "The health of Lord Acheson," which was enthusiastically received by the company, and was replied to by Lord Gosford. His Lordship then proposed "The healths of Mr. Molloney and Mr. Boyd, and the other strangers who had honoured them with their company."

To this toast both these gentlemen successively replied, in a manner most gratifying to the Meeting. Mr. Boyd made a statement of the success which had attended his first year's exertions, which will be found annexed (see statement, No. 1) with other statements referred to; and Mr. Molloney concluded by proposing Mr. Blacker's health, to the value of whose exertions, and the great extent to which his influence had extended, both these gentlemen bore ample testimony.

Mr. BLACKER, in returning thanks, said:—I am glad to avail myself of this opportunity to correct a misapprehension which has been, I have observed, in many instances taken up—first, that the turnip crop is the *sole* criterion of improved farming—and, secondly, that the cattle ought to be kept constantly confined to the house from year's end to year's end. I have never insisted upon either of these points, though I know they have been attributed to me. In regard to the first, you must all know, that in many soils, and under many circumstances, *potatoes* may be preferred: for instance, in very stiff clay, in soils not well drained, and where the land is but recently reclaimed, and not yet pulverised sufficiently for so small a seed—and likewise when there is plenty of fuel, which removes one great objection to the potato as a *permanent* article of food, because by boiling it is rendered wholesome in constant use, which it otherwise most assuredly is not. Where, however, circumstances are at all favourable, I strongly recommend turnips as the cheapest and best food which can be produced, and I am glad to see that every year not only on the *Gosford* Estate but in those surrounding, this crop is annually getting into more favour. Several of the *Gosford* tenants have increased their quantities to one, two and three acres, and, generally speaking, those that are the best farmers are the most partial to them: as instances, in the surrounding country, I might mention as most distinguished, Mr. Dougan, of Bellalin, Mr. Scott, of Lurgaboy, and Mr. Pillow and Mr. Dobbin, of Ternascobe. The turnip crop this year is not so good as last, and I would wish to take this opportunity of mentioning that they should not be used too freely at first, where they are not in great plenty, but kept to April, and May, when the fodder begins to get dry and fusty, at which time a few turnips are invaluable to the farmer who has any regard for the condition of his stock, as with turnips cattle will eat fodder of any kind, however bad it may be. In regard to the second point of keeping the cattle constantly in the house, I have always advocated the use of a straw-yard, or a small paddock, or even to put them out upon a tether for a certain portion of the day—and where clover will not come to the scythe, or after being twice cut, I see no objection to their being allowed to graze upon what would otherwise go to loss when the ground is

dry and the weather not severe. In Berwickshire, one of the best farmed districts in Scotland, I believe the five-course shift is in the most general use, which admits of the cattle being pastured almost entirely on the second year's clover. So that in itself the cattle being allowed to pasture is no conclusive argument that the agriculture is bad—on the contrary, I would rather recommend the five-course to such large farmers as there are in Berwickshire, because, and I beg your attention to it, they could not keep the requisite stock in the house without incurring more expense in labour and management than the saving in food would pay them for. They therefore appear to me to be right in adopting that rotation, and they make up for the loss of manure by bone dust and by stall feeding in winter, to a great extent, on large breadths or turnips. But in our case, here, I recommend the four-course rotation and the greater confinement of the cattle, because the wives and families of the small farmers can attend to all the stock the farm can support, without entailing on the farmer any extra expense whatever. Another misapprehension has been, that I am partial to the creation of small farms: on the contrary, this is a matter which has been forced upon me by the state of things previously existing, and I am very glad to assist the different premium men in increasing theirs, which they are almost every one doing. I merely contend that it is cruel to turn out small farmers, *en masse*, if they can be got to cultivate their farms so as to live comfortably, and I think it is *impolitic* to do so in any country where tenants, with proper capital to cultivate large ones, cannot always be had. I have known men improved in their comfort and circumstances by having their farms *reduced* to what their capabilities were equal to. Having said thus much in explanation of the misconceptions I have alluded to, it may, perhaps, be as well to state that what I have insisted on as *absolutely necessary* in improved cultivation, is to prevent the land being exhausted by successive corn crops, and in this respect I am not afraid to state to your Lordship and to this meeting that this practice is, I may say, entirely exploded. No one now pretends to argue in favour of it as a practice to be persisted in, although in some few cases, in order to bring each field into the same crop, it may, perhaps, be partially adopted to a very small extent. The universal introduction of clover, sowed with the first grain crop after the manure, proves this to demonstration, because it is a proof that is plain to be seen; and it is only wonderful that the practice should have so long prevailed, for it is well known that a good English clover, cut and carried to the cattle, will feed three cows for the summer months, and supposing each to yield but 3*l.* worth of butter, that would amount to 9*l.* per acre for the clover crop, besides the butter-milk and manure, which would be cheap at 2*l.* more. Thus a good crop of clover is nearly worth two second crops of grain, besides that the crop succeeding the clover is fully equal to the crop after the manure. This is now beginning, from experience, to be understood, and I have found that experience alone will carry conviction to those who stand most in need of instruction, for invariably the more ignorant the person is the more conceited he is of his own skill. This is most strongly exemplified in the cultivation of the turnip crop; several still persist in the practice of not hoeing out their crop until the thinnings are sufficiently grown to afford, as they term it, a *bite for their cattle*, which may be compared to saving a penny and losing a pound. Others consider their crop as lost because it does not exhibit a flourishing appearance early in

the season, and will not believe that, by perseverance, and keeping the ground loose about them, their crop may be recovered. Many turnip crops have been lost this year from this cause. Having made these few observations, I have only to express my hopes that the strangers present, should they go out to visit his Lordship's property to-morrow, which, perhaps, some may be inclined to do, will not expect to find the entire property improved to the same extent as the farmers in the premium list have described—and will keep in mind that the failure of the potato crop for three years in succession, has materially retarded the small farmers' advancement. It must be understood that the premiums and certificate men are the most deserving on the estate, and, of course, the others are not on a par with them; but any one going out to inspect will see, from the clover now visible, that both the second grain crop, and the useless pasture are exploded, and that a decided improvement is in progress; and I am always sorry when expectations are raised beyond this point. I beg to return thanks for the flattering observations which have been made in regard to myself, and will not longer detain the company.

The next toast given was "Colonel Close, and success to the improving tenants on his estate," which was replied to by his agriculturist, Mr. MILNE, who handed in sundry statements to Mr. Blacker of the progress of the tenants under his care, which will be found subjoined, and are highly creditable to his exertions. (See No. 2.)

His Lordship then gave "the health of Mr. Binns, and success to the Lancaster Farming Society," prefacing his toast by stating, how much we ought all to feel indebted to that gentleman for the honourable mention he had made of this part of the country in his interesting work entitled "The Beauties and Miseries of Ireland." Mr. Binns was one of the Agricultural Poor Law Commissioners, and no man could be a more competent judge in such matters, and he was glad to find he had been lately advocating the introduction of the green crop system and housefeeding into his own neighbourhood in Lancashire.

Mr. BLACKER rose to reply to this toast, and having the pleasure of knowing Mr. BINNS, ventured to say, on his behalf, that he would feel highly gratified by the compliment just paid him, and certainly no person had higher claims on the good feeling of this meeting. He (Mr. Binns) was so struck with the almost uninterrupted sheet of grain crops which covered the face of the country, and the absence of pasture, that he seemed to feel a conviction, that there was no safety for the English farmer except in adopting the same system, and he had ordered over several of the little pamphlets on the improvement of small farms, which were familiar to most of the company, for distribution in Lancaster, and the company would be gratified to hear that so many more had been circulated by others in different parts of England, that he (Mr. B.) had been induced to send a number of them to Ridgway's and Groombridge's in London for sale; and certainly it did appear to him, both from his own observation and from what appeared in different farming publications, that there was as great a want of the practical application of the principles therein inculcated in many parts of England, as there was in most parts of Ireland. As the proceedings of this meeting generally found their way into the columns of the English agricultural papers, he would take the liberty of drawing the attention of the farmers in those parts of the empire to the advantage they would derive

from changing their present system and practising the alternate system of husbandry, which these pamphlets inculcated by arguments adapted to the humblest capacity. He was principally induced to advert to this subject, from seeing in that very useful publication, "*The Farmer's Magazine*" (in the number for November last), an account of the prizes distributed by the Ashton Farming Society, in which he was almost inclined to think there must be some mistake, for in the adjudication of the premiums for the best cultivated farms, Mr. Winder's farm, to which the first prize was awarded, was stated to contain 165 acres, 1 rood and 2 perches, but in the specification of the crops there were only 112 or 113 acres accounted for, and of these none at all were under grain crops, which led him to suppose that the grain crops had, by mistake, been omitted; but this will only tend to make the comparison the more striking, for it appeared by a list given him by Mr. Bruce, his Lordship's Agriculturist (see No. 3), that upon 115 acres, of which $3\frac{1}{2}$ were unfit for cultivation, the tenants here, although having half this land under grain crops, keep a better stock than Mr. Winder is stated to have upon the 113 acres, of which the particulars are given, besides allowing to him the advantage of all the fodder which might be derivable from the grain and other crops, which it would appear had been omitted to be noticed upon the rest of the farm, consisting of about 52 acres. The comparison stands thus:—His Lordship's tenants have 30 dairy cows against Mr. Winder's 19 dairy cows. The heifers are alike, being 10 in each—but there are 9 horses here against his 4, and 30 pigs against his 4, besides a bull and 4 calves—so that the Gosford tenants have the advantage by 11 cows, 5 horses, 26 pigs, with a bull and 4 calves, to set against Mr. Winder's remaining stock of 7 yearlings, 7 calves, and 20 ewes, and 8 lambs; from which it is evident the comparison is greatly in our favour. And it is rendered still more remarkable by this consideration, that besides the half of the Gosford tenants' land being in grain, nearly one-fourth was in potatoes for the consumption of their families; and the 9 horses, though fed on the land, were, in point of fact, not employed half their time in the cultivation of their farms, but were engaged in other work; and it appears Mr. Winder has been obliged to purchase large quantities of manure, whilst we make what is amply sufficient on the farms. The use of all farming publications is to bring such results as these into comparison: even the practice described as followed on the prize farm at the Lancaster meeting would not appear by any means superior; more than the half of the entire is in meadow and pasture; the consequence of which is an immense outlay in manure which the farm itself ought to provide. We are not furnished with the stock kept, and therefore cannot enter into any strict comparison of produce, but I see that Mr. Scott sanctions two grain crops in succession, that is wheat and barley, and he sows his clover and grass seeds with the latter: whereas, we think this to be decidedly a bad practice, and that the seeds, if harrowed well in Spring, upon the growing wheat, or covered with the rake as we sometimes do, would greatly improve the wheat crop and make the clover and grass seeds yield at least one third, or I might say one half more. I trust neither Mr. Binns nor Mr. Scott will be offended at my making these observations, for I assure them they are made in the most friendly spirit, and with the wish to excite a spirit of inquiry and examination, which if it could be made general would be attended with the very best effects; and without such being the case *The Farmers' Magazine*

would lose half its utility. I am sensible I have trespassed too long on your attention, but the importance of the subject has led me unawares to this great length of observation; and even now, I cannot sit down without pressing upon the English landlords and Agricultural Societies, that if their farmers are ignorant and uninstructed, the natural remedy is what I have advocated, viz. to get people to teach them; if they cannot send the whole population of their district to Scotland, let them bring a Scotchman to them; if they cannot bring the mountain to Mahomet, bring Mahomet to the mountain.* By so doing the whole modern improvements in agriculture are embodied in the teacher selected, and at one stride the march of agricultural improvement oversteps the limits to which, for a century to come, it might otherwise be confined. I shall not fail to acquaint Mr. Binns of the compliment paid to him by this meeting, as a fellow labourer in the good cause, and I am sure there is no one whatever who would be more gratified at having such a compliment paid him.

The noble CHAIRMAN then gave, "The Earl of Charlemont and his improving tenants." In reply to which Mr. SCOTT, of Lurgaboy, one of his lordship's most respectable tenants, returned thanks for his landlord, and stated, that he had been every year increasing his turnip crop, and was every year becoming more sensible of the great advantage derived by the farmer from the cultivation of that crop.

"The health of the Earl of Caledon and the improving landlords of Ireland," was then given.

Mr. BLACKER here rose and said: Although I have so often claimed your attention this evening, I cannot allow the toast just given to pass without remarking a little upon the observations from time to time appearing in several of the London papers, to the prejudice of the Irish landlords, which having been allowed to circulate, without contradiction, have produced an impression upon the public mind in England, to such an extent that nine persons out of ten really believe the Irish landlords to be universally the heartless extortioners which these papers represent them to be, and are led to consider them as wholly careless of the comfort and welfare of their tenants or the improvement of their estates, and only solicitous to obtain the greatest rent which they can by any possible means extract from them. I am happy to avail myself of the opportunity which this toast has afforded me to give a decided contradiction to the representations I have alluded to. In every class of society there must, of necessity, be some who will bring discredit upon the rest, but, as a body, I assert the landlords of Ireland may challenge competition in the present day with any similarly circumstanced in the empire. The owners of unimproved but reclaimable lands have, I admit, been heretofore indolent in regard to them, from their attention not having been directed to that particular point; but I assert they are now, *as a body*, neither careless of the comforts of their tenants or the improvement of their estates, nor are they extortioners in rent. It is almost invidious to mention individuals when so many are entitled to notice. Your lordship's presence prevents me saying what I should otherwise feel called upon to do; but where will you find, in any country, landlords more ardent in the pursuit of every thing which can conduce to the benefit of their tenants, or the improvement of their estates, than the Earl of Caledon, whose name is

coupled with the toast, or Lord Clements, Lord Clonbrock,* and a long list of others that might be adduced, nor am I inclined to confine myself to titled proprietors; no person who takes the trouble to enquire, will fail in discovering numbers of commoners in every county in Ireland who are devoting themselves to the same laudable pursuits. I, by accident, met with lately, some letters, one from Col. Connolly, and another from Mr. Kirwan, of Castlehacket, which will convey some idea of the exertions now in progress; the dates will show that they were not intended for publication, but to serve my present object, as there is nothing of a private nature in them, I feel certain they will not be angry at my having recourse to them to prove my assertion in favour of the exertions of Irish landlords: they are too long for perusal now, but I shall give them to the reporter, with perhaps some others. (See No. 4.) They are not solitary cases; no one who travels through Ireland, and wishes to seek for information, can avoid learning that every principal landlord, almost in the kingdom, is occupied in pursuing some plan of improvement—some following the plan adopted here of appointing agriculturists, others confining themselves to the lending of lime, or seeds, or giving premiums for best crops, stock, &c.; some employed in the improvement of land that has been under the plough, and others reclaiming that which has never been entered by plough or spade, as Mr. Fetherston, Capt. Kennedy, and Hon. J. Hewitt, &c. In the latter, as in the former, the different landlords are adopting different plans according to local circumstances. On the part of the commissioners of education, I have located up to Nov., 1837, 53 families who had been under-tenants or cottiers on their estate, on the uncultivated edges of a large bog in the property, producing a rental of 68*l.* 11*s.* 8*d.* yearly, a considerable portion of which is paid up to the 1st of Nov. 1838; and, except in a few lots which I am afraid are absolutely irreclaimable, this rental may be considered as well secured by the improvement made: besides this, there are three more families since taken in, who will not appear in the rental until next year, so that, on the whole, estimating the well-secured rental at 65*l.*, and valuing it at 25 years' purchase, it will amount to

	£1625	0	0
Add to this already remitted.....	206	16	4
And this year's rent in course of payment.....	68	11	8

The total gain therefore will be..£1900 8 0

up to the end of this year, without any cost whatever, or expense to the commissioners, further than a trifling loan, interest free, which never exceeded 123*l.* 13*s.* 8½*d.*, and which is now reduced, by the payment of the instalments, to the small sum of 36*l.* 11*s.* 2*d.*, which in due time will be also repaid. An English or Scotch reader will scarcely believe that not one of these poor people have a lease or any tenure whatever of their holdings; and what is still more strange, in laying out their allotments, I never was asked by any one individual what rent I was going to charge him; yet I was an entire stranger, and the commissioners, for whom I acted, were likewise unknown. This shows a confidence in the general good faith of Irish landlords, which is not the growth of a day, but has been handed down from father to son; with the lower Irish, "acting like a gentleman," is synonymous with every thing that is

* See Mr. Rose's letter, who is himself a Scotchman, and ardently engaged in the improvement of his estate in this country.

* See letter from his Lordship's Agent, Mr. Birmingham, No. 5.

fair and honourable, and to tell a man he is no gentleman, is to charge him with everything the reverse. I put the tenants under a small rent after the first year. Captain Kennaedy gives his land for seven years free, and for fourteen years after adds 1s. a year annually. (See No. 6.) The Hon. Mr. Hewitt gives his land five years free, and five years more at 1s. of annual increase. Mr. Cole Hamilton pursues another course. Colonel Conelly's letter will speak for itself. Sir Robert Ferguson affords a very splendid example upon his property; and Lord Clonbrock also reclaimed largely. The particulars of Sir R. Ferguson's improvements are published in the *Irish Farmers' Magazine*. It is several years since, in a small pamphlet addressed to the Royal Society, I asserted the possibility of making the labouring poor support themselves and their families, by giving them allotments of land to exert their industry upon; and the advantage, to landlords and the state, by adopting this plan, I conceive to be fully proved by the success which is attending every attempt. The cause of my having succeeded in deriving a yearly income from these locations so much sooner than others, is not from any superior cleverness or good management on my part, but from the dense population in the neighbourhood, the want of which makes Captain Kennedy's and Mr. Hewitt's land almost valueless, although intrinsically one acre of theirs in many cases, which they give free, is intrinsically worth more than three or four acres of the school lands belonging to the commissioners, which are paying me rent; this seems fully to prove the folly of sending to the woods of America so many industrious people, who might be so much more beneficially employed at home. I trust I have said enough to show there is no apathy or want of exertion in Irish landlords at present, whatever foundation there may have been for such a charge formerly; and the appearance here at this inclement season of gentlemen from Clare, from Donegall, and Sligo, is in itself sufficient proof of the spirit that is abroad; nor is a spirit of inquiry and exertion in this respect confined to landlords, for I have no hesitation in mentioning what appears to me to mark a new era in the history of Ireland—namely, the application of a clergyman, at the suit of his parishioners, to obtain for them an agriculturist, to be paid by funds collected from themselves; a fact which speaks volumes in itself and requires no comment from me. I have still, however, a few words to say as to the charges of rapacity and extortion so liberally bestowed upon Irish landlords; in this respect I shall just mention one or two facts. Upon this estate a man of the name of Anderson, in old times, had got a lease, which, as is often the case, he and his son after him sublet, until there was little or none left in their own hands; there was, however, a small portion, which, not being sufficient for their support, the son of the lessee sold to one of the undertenants. This sale took place precisely at the time Mr. Richmond, the land valuator, was on his way to lay a new rent on the land at the fall of the lease; both parties knew this fact, and yet Anderson was able to obtain for his good will of this small piece of land the rate of 17*l.* the English acre, the purchaser taking chance of whatever valuation might be laid on. I will now mention another fact, and then draw the inference which naturally arises. I was some time last year at a farming dinner on Lord Downshire's property, and spent part of the morning in riding over the estate which his lordship, who very early devoted himself to promote the improvement of his property, and the education of his tenants, and still, perhaps, devotes more of his time and attention to those subjects

than any person of his rank and fortune in the empire. His lordship stopped to inquire from one of his tenants whether he had yet got possession of a portion of land from one of his neighbours, which was necessary to square his farm; the answer was in the affirmative, and the enquiry was then made what he had paid for the good will of it, and it turned out to be 27*l.* the Irish acre, for land that the rent was 23*s.* per acre, which is nearly the full value of it without any rent at all. Now I don't say whether it is right or not to permit this; nor do I say that the rent was not fully equal to what it ought to be, but I do say that it is a positive refutation of that charge of rapacity which is made; and is not the openness with which we have seen the tenants here this night (scarcely one of whom has a lease) boasting of their additional gains, a sure proof if any were wanting, how secure they feel that their improvements will not be taken advantage of, and how fully concerned they are that their landlord rejoices in their growing comfort and prosperity; and as to rents exacted, I think I may say the rents paid in the county of Armagh, are, taking the county generally, the highest in Ireland, and yet where will you find in England any farm where the tenant can pay the rent from his dairy, and have half the land under grain crop, and his pigs and poultry, and nearly one-fourth of his land in potatoes besides, for his own use? This evening you have seen this proved, and if it can be done here, I am certain there is not a farm in Ireland under any principal landlord, where the tenant may not do the same, if he chooses to follow the plan here in practice. I trust, therefore, the conductors of the press will pause and inquire, before they villify, as they have done, a body of men who may challenge competition as a body, with any in the empire.

After which much interesting conversation, relating to the improvement of Ireland, commenced, and was continued until his lordship observing the lateness of the hour, called on Mr. Blacker to bring forward the agricultural subjects appointed for discussion.

The subjects first in the list were, "the benefit of ploughing in October and November, for the fallow crop of the following year, and the advantage of forming the potato ridges and putting in the manure as soon after as possible, and putting in the seed at the back of the spade in Spring."

In opening this discussion, Mr. BLACKER observed, these two subjects were connected with each other in this respect, that they both had for their object the forwarding of the spring labour, and if even there was no other advantage, this alone was quite sufficient to induce any thinking person to adopt them; and particularly the poorer farmers, who, not having horses of their own, are often obliged to run the risk of losing their entire crop, because in the hurry of the spring season they cannot get a horse to hire, whereas, if this was set about in winter, they might get the land ploughed or dug, without the least difficulty. The poor man is therefore particularly called on to be the very first to get his land ploughed, in place of being the last; but, this is not all, for every experienced farmer will testify, that ploughing before the winter is of the highest use to the land, and that by so doing, the frost is working for the farmer in pulverizing the ground, whilst the farmer himself is sleeping in his bed, and does that for him much better than he would do it for himself. Again, in regard to putting out the manure, and forming the potato ridges in winter, the manure goes one-half farther; the land gets the full benefit of it, and by being left dry all the winter, from the trenches being

opened, the soil is in the very finest state for receiving the crop, which is proved by this, that the crop put in in this manner, is ten or fourteen days earlier than when the seed is planted in the common way. There is no fear of weeds, for the ground is turned up at a time when the growing season is over. I have sometimes thought, from seeing the potatoes which had been left ungathered springing up so luxuriantly in the succeeding crop, that no danger would be incurred by putting the seed in uncut during the winter, covering it deep in order to protect it from the frost, and to prevent its too early appearance above ground. It is evident the danger of failure of the seed from its heating or exhausting itself by throwing out shoots in the bins before planting out, would in this way be completely prevented, and I intend to have the experiment tried this year upon a small scale, in order to report the result at our next meeting. I would not wish the practice followed to any great extent, until experience had confirmed its utility, but I don't believe there is any fear of the frost injuring the seed, nor do I think frost will injure potatoes, as food, materially, if they are allowed to thaw without being exposed to the light, which produces some effect that is not well understood; and, therefore, if I am right, potato bins should always be perfectly covered, and should not be opened till some time after the mildness of the weather had thawed any frost that might have penetrated.

Mr. RENNOX then addressed the meeting. He said—The forming of the potato ridges and putting out the manure during winter, the seed to be put in in spring at the back of the spade, I have for some years practised, and always found it very beneficial; in the first place, the ridges can be formed when the farmer has very little work to do, and the manure used will be properly decomposed; by the time the seed is put in in the spring, the soil will be dry, and in a better state to receive the seed early; it will greatly forward the farmer with his spring work, especially those who have no horses; it will enable them to have in their crop of potatoes in proper time, they will also be ready for raising nearly a fortnight earlier than those set in the usual way.

Mr. MOLLONEY mentioned that he could speak also in confirmation of putting out the manure early, for he had tried it, and had dibbled in the seed in spring, and he thought he was safe in saying he had an ordinary crop and a half upon the ground.

Other gentlemen spoke in confirmation of the above. After which,

Mr. BLACKER introduced the discussion of the next subject, which was the relative merits of the new method of furrow-draining, compared with the old method of cross drains, which he began by remarking that much new light had broken in upon this part of agriculture of late years in Scotland, where it had been found that, however useful one or more cross drains (with a tail drain, where necessary,) might be for carrying off the water, which made its way in different places to the surface, there was no way that land could be thoroughly and evenly drained, except by the principle of furrow-draining, as now practised, the ridges being made from 15 to 18 feet wide, according to the nature of the soil. I attribute (continued Mr. B.) the general prejudice which exists in favour of the old method of cross drains to the not very unnatural mistake, that because when water reaches the surface on the side of a hill, it of course runs downwards; that it will therefore, in all cases, pursue the same course *under ground* as what it is seen to do *above*, and that in either case, the cross drain is therefore the most effectual way of in-

tercepting it in its course and carrying it off; but nothing can be more erroneous than such a idea, for although it is quite clear that water will run down the hill, above ground, it does not follow that it will make its passage good in the same direction underneath. This is sufficiently proved by the fact, of which every one is aware, that in many cases, the springs break out *on the top of the hill*—the water underground forces its way in whatever direction it meets with the least resistance, and no one can tell in what direction it may approach the surface; but it is evident cross drains will only catch it in one direction that is the descending; and furrow drains at every fifteen feet, are sure to top the flow towards the surface, let it advance in what direction it may before it reaches within such a distance of the surface as to chill the seat of the manure or injure the growth of the crop, particularly when their effect is assisted by trenching the ground either with the spade or the subsoil plough. The draining and trenching should always accompany each other; for in most countries the deep trenching and ploughing produce a sufficiency of stones for the drains, and thus a considerable saving in carriage or in cost of tiles as a substitute is obtained. The advantage of furrow-draining is now so well understood, that the landlords in Scotland, are very generally in the habit of advancing 5*l.* or 6*l.* per acre to their tenants for this work, for which the tenant willingly pays 5 per cent. interest. Thus the draining of an acre will entail upon the tenant a charge of 5*s.* or 6*s.* a year until the debt can be paid off, but the crop will pay them five or six times that charge. I have seen an account of an experiment where the drains were made at 45 feet, or 3 ridges asunder, and the result was that the partial effect by the single drain on the ridge right and left, was at the rate of from 7 to 9 bushels per acre more than the centre ridge, which had not the same advantage. I speak, Gentlemen, merely on the theory of the matter, but I hope some of the company may be able to confirm what I have advanced by the result of their practical experience; but I am so convinced of the utility of this practice that I have procured his Lordship's consent to advance to any man who wishes to try the experiment upon any field, or part of a field, as much per acre as will pay him a shilling a day for every day's work he is employed at it, provided the work is effectually executed, and notice given to me before beginning, that everything may be clearly understood. No man need therefore say he cannot afford a trial nor need any tenant complain for want of employment. Mr. B. then read a letter from Lord William Bentinck, to whom he had applied to procure from the Duke of Portland, who had first introduced furrow draining in Scotland, some account of the results that had attended the experiment there, which his Lordship had done, and returned him a report made lately to his Grace, by Mr. Sample, who superintended the improvements on some of his Grace's estates, which was as follows:

"On the effects produced on those farms where furrow-draining has been applied, the following results on Tenrother Lane Farm, where it has been longest in operation, have been carefully noted down by the tenant, at my request: In a field called Lowerberry Laws, containing 17 acres, 7 were furrow drained in 1834, the field then being oat stubble after clover. The general produce of this field, before being drained, varied from 12 to 16 bushels per acre when in wheat—that part which was drained, being the best soil, generally produced about 4 bushels more than the other part of the field.

"In 1835—the field in fallow.

" In 1836—wheat. The drained land yielding 12 bushels per acre more than the other, or an increase of 8 bushels per acre,

" In 1837—clover. The drained land producing 1½ ton of hay per acre—being nearly double the produce of the other part.

" In 1838—oats, recently cut and in bulk, one-third more than the other part of the field.

" Half another field of inferior quality was drained.

" In 1837—wheat. The drained land yielding 4 bushels more than the other.

" In 1838—clover. The drained land producing full one-third more than the other."

Mr. Sample added that he might multiply instances, but he had selected these as being on land where the draining has been longest in operation.

Mr. B. was followed by Mr. GRAMAM, a native of the neighbourhood, who had just returned from Scotland, where he had been employed by different farmers, in the execution of drains by contract. He said :

My Lord,—I wish to direct the attention of the people of this country to the necessity for, and the utility of, a thorough drainage, as being the first rudiments, and most important part of farming ; those who have been brought up in the old school, and have not yet shaken off the selfish chains of opinion with which their minds are fettered, still believe that the old rumbling drain is the only method to be adopted. These drains were cast wherever a spring or spout appeared to inundate the surface. They were cast deep, and from 12 to 18 inches wide at bottom, filled with stones gathered off the ground, and thrown roughly in, or otherwise, having a pipe laid in the bottom with the largest stones, and the smaller ones put on the top. Either of these plans are found, by long experience, to be very unprofitable, when compared with the present system of furrow-draining. In the former of these plans, the water had such a wide space to spread over, that it could not run with any force, but rather oozed its way through the large stones, which were constantly retarding its progress, and leaving a slippery glit or mud behind it, insomuch that in a few years it became entirely useless ; and in the latter plan, which is, having an open pipe, there was such a harbourance of rats, mice, frogs, &c., which were constantly raising a quantity of mould, and must have inevitably stopped the progress of the water in a short time, and rendered the drain of non-effect. Many other proofs I could add of their insufficiency, but I think these should answer my purpose at present. It only remains with me now to shew a more beneficial and permanent plan ; but ere I proceed to this, I would wish to impress on the minds of all present that anything once well done, is much better than that which is gone over twice in a slight or ineffectual manner ; and as your lordship has such a desire that your tenantry should be made comfortable, and every man inherit the land of his forefathers, I hope all will duly understand that every shilling expended in the improvement of their land, by means of a thorough drainage, where the third or fourth generation will most undoubtedly continue to reap the benefits, is much more profitable than hoarding up gold in a strong box, where it may still fall into the hands of the spendthrift ; therefore I hope whatever the people drain (be the quantity ever so small), they will do it to perfection. The system I would propose is a regular furrow drainage, from 15 to 21 feet apart from each other, according to the wetness of the surface, and retentive subsoil. These drains need not be cut more than 2½ feet deep, ex-

cept when we meet a sand or gravel bed, which must be cut to the bottom, in order to catch the springs, if a fall can be obtained ; but whatever depth they may be cast, they should always be filled to within 15 inches of the surface with stones, broken in such a manner as that they may pass through a three-inch ring in all directions, and then covered with a thin sod, tramped neatly in with the grassy side down ; the clay or subsoil must be spread over the ground, which will renew it very much when pulverised with the frost ; afterwards the ground should be all moved 15 inches deep, either with the spade or subsoil plough. The ground handled in this manner will never return to its former retentive state, as the water will not lie upon the surface, but filter into the drains as fast as it falls. The drains should not be more than four inches wide at the bottom, for the less bounds the water has to spread over it will run the stronger, and keep the drain open longer. The ridges should be always kept in the same form, and the furrows always above the drains. Men should pay particular attention to good ploughing, and sow the seed without breaking in ; when this is attended to they will not have to shovel up their furrows, but have a level crop over all the face of the ground. But, my lord, to give a full account of this system (and enumerate the benefits to be derived from it by an increase of crop, ease of horses, saving of manure, saving of seed, and the advantages of having the ground at all seasons dry and in good order, so that we could put in our crop much earlier, and get it sooner out, which would give us a longer day, and generally better weather, besides it would almost totally destroy weeds of all kinds), would almost swell a volume ; and as I intend, in a few weeks, submitting these and many other important considerations to the public, I will not trespass longer at present, but I confidently hope that all who have it in their power will try this system, and it will afterwards speak volumes for itself ; and as your lordship has put it within the reach of all, by advancing money to improve the land, not seeking anything but simple interest at five per cent., which would seldom raise the land more than 5s. per acre—and I am certain, from experience, it would be a pound better—I think the sooner an experiment is made all will have the greater cause to rejoice.

Mr. GRAHAM having resumed his seat, was succeeded by Mr. RENNOX who said,—With respect to furrow-draining, we commenced trenching last winter, with the intention of doing only a few acres ; but the Rev. Dr. Blacker, on seeing the distress of the labouring class at that time, continued on till we trenched and drained 14 acres. Expense of trenching one acre 18 inches deep, 2l. 14s. Ditto of draining one acre, the drains made parallel to each other, at 7 yards' distance, sunk 30 inches deep and 14 inches wide at top 2l. 2s. Trenching and draining, per acre, 4l. 16s. The sinking of the drains may be assisted in the trenching, by casting off the earth to each side of the place where the drains are to be made ; this will sink the drains to the same depth the trenching has done ; in some soils there will be nearly as many stones raised by trenching as will fill the drains. One very material circumstance I observed concerning this land that was trenched and drained, that is,—during the very heavy rains of this season, and particularly that of this day, there was no surface water to be seen on any part of it whatever ; but as soon as the rain fell, it sunk down to the parallel drains, and was immediately carried off to the main ones. It appears evident that furrow-draining is a more perfect system of draining than the old system of cross drains, as, according to the distance we made

them, the ridges might be formed so as that the drains and the furrows may correspond; by this it is plain the ridges would be kept free from any superfluous water. The land managed in the aforementioned manner, was planted in potatoes, and only for the good drainage it had, the crop would have been much deficient in produce to what it is; there was $2\frac{1}{2}$ cwt. per perch, which is 20 tons per English acre—this may be considered a good produce when the state of the weather last summer is considered with it. The total management of one acre of potatoes, including trenching, draining, manure, lime, seed, labour, &c., is as per annexed calculation, 15*l.* 19*s.* From this calculation it will be easy to try the profit on one acre, when a price is put to the potatoes, the produce being 20 tons, or about 800 bushels.

A calculation of what one acre cost in the total management of the crop:

Trenching one acre.....	£2 14
Draining do.....	2 2
Scuffling and harrowing.....	0 8
Opening and closing drills.....	0 8
Carrying out manure and spreading do.....	0 6
Scouring and grapeing tops off drills.....	0 10
Stripping and harrowing.....	0 10
Moulding.....	0 4
Manure.....	3 0
Lime.....	2 15
Digging out potatoes.....	0 12
Rent.....	1 5
Seed.....	1 5

£15 19

Several of the company here expressed their inability to understand the advantage of the furrow-drain, which must, in general, go up and down the hill or fall of the ground. Mr. Blacker said it was not an easy matter to explain, and required a good deal of thought to get rid of the prejudice that existed from preconceived opinions of long standing, and made the following additional remarks:—I have already (said Mr. B.) stated that water *under* ground does not follow always the course of water *above* ground (which uniformly runs down the hill), but that it is sure often to rise up, and vent itself at the very top, and make the very highest part of the ground the very wettest part of the whole, and this may be pretty well understood by supposing the side of the hill to be covered with a layer of retentive clay which the water cannot escape through; it is therefore, in such cases forced through some vein leading towards the top, and in striving to rise to the height of the parent spring, it bursts forth as I have said. This appears to me all easily understood, and proves that the course of water under ground may be exactly in the very opposite direction of what it takes when it is liberated at the surface, and descends of course by its own weight. Now suppose that in its passage to the top of the hill, instead of being entirely pent up, that a certain portion should escape through any more porous earth, lying between beds of clay, forming the hill in horizontal strata or layers, then the point to be considered is, how you can tap this flow of water passing through so many veins towards the surface before it can come high enough to injure the crop? Now, suppose the strata of clay to form this hill, as we often see dishes piled, one upon another, in a delf-shop, and that the passage for the oozing of the water between the beds of clay should resemble the passage to the surface aforesaid by the channel formed between one dish and another, then let us see how the two kinds of drains would operate. Let us first take the cross or horizontal drains, and it

appears, I think, quite plain, that if you carry one right round the hill you would only tap the flow of the water between *one* dish and another, and if you run it diagonally you would only tap two or more, according as the line was more or less slanted, which two or more would have tapped in a much shorter space of drain, by taking it right up and down. But let us consider further, that there must be other cross-drains below those round the hill to catch the other water courses, and suppose these succeed each other at a 10-feet lower level than the one above, then does it not appear plain that unless you sink each upper drain so deep as that the *bottom* of it will be at the least upon a level with the *top* of the drain, *immediately below it*, there will be an intervening space, on the surface of the hill, between the two, from which the flow of water will not be intercepted at all; and if you say the diagonal drain will obviate this objection, then you will have to make these diagonal drains within 15 or 16 feet of each other, for in heavy clay soils nothing wider will answer; and if you do this you will again find that the up-and-down drain will accomplish this *with less cutting*, and is of course to be preferred; and every one must see that to cut the horizontal drains down to the level of those below them, must be quite out of the question. But to pursue this a little further: these *horizontal* drains, if they were made, would be right across the general line of the *furrows*, and would, therefore, have little effect in carrying away the rain water. Now compare what I have said with the effect of the up-and-down or furrow drain—in the first place it taps the flow of *every* water-course between the layers of clay, at a distance of 15 to 20 feet, (according to the nature of the soil,) at such a depth from the surface that the moisture is directed into the drain before it reaches the seat of the manure, and therefore the warmth of the manure is preserved, and one-half less of it will answer. This effect of the drain up and down, in tapping the flow of water, you may fully comprehend, by supposing the dishes in the pile to be cut through the edges, for an inch or two, from the top dish to the bottom, in which case it is quite plain any moisture flowing between them *would escape through the cut* so made, and none whatever would reach the *edges of the dishes* which correspond with the surface of the hill they have been supposed to represent. The furrow-drain, therefore, appears calculated completely to carry away every flow of under water before it can do any harm, and the shape of the ridge, throwing the rain water right and left into the furrow; next over each drain it is equally effectual in carrying off surface water as it falls, and thereby prevents the mould in the furrows from being washed away. It seems to me, therefore plain, that the furrow draining is the cheapest and most effectual for laying ground *dry throughout*, and more useful and necessary when there is a rapid fall, than when there is but a gentle inclination of the land. Observe, however, that in what I have said I don't enter into the question of what any *one single drain* may do to carry off any main spout that breaks out in a field, nor do I allude to the utility of a horizontal drain, surrounding the base of a hill, to cut off the seepage of it from any adjoining flat; I speak merely of laying land down in a manner *effectually and evenly dry*, and not of any partial attempt. Before I sit down I should explain that, although I recommend the trenching, or subsoil ploughing to accompany the draining, because in most cases it will supply stones enough for the drains, and at the same time break through that hard kind of stratum sometimes met with, called in England the *pan*, and by this means

give the ground more immediate advantage from the drains, by giving a freer passage for the water to reach them; yet I am fully of opinion that furrow draining, of itself, will, in some little time, destroy the *pan* altogether; for I believe it is generally considered that this *pan* is produced by the effect of some kind of iron ore in the soil, which the moisture forms into a cement, and that by the gradual withdrawing of this moisture, by means of the drains, this *pan* will be decomposed and crumble into pieces, so as no longer to be injurious. I wish likewise to mention that drains, $2\frac{1}{2}$ feet deep, as Mr. Graham has stated, in some soils are not found to be deep enough; for at the Highland Society Meeting held at Dumfries, I recollect to have heard Sir James Graham of Netherby (who was said, if I recollect right, to have drained his entire estate $2\frac{1}{2}$ feet deep), regret that he had not sunk the drains $\frac{3}{4}$ feet deep, which he would certainly do if it were to be done over again.

Several of the company still expressed the difficulty they had in comprehending the matter clearly, so that the subject must be referred to the more mature consideration of the reader, and the sure test of experience.

Lord Gosford interrupted the discussion by saying, this was a very *dry* subject, and as he thought it was now getting late, he proposed that the first application of the drainage principle shall be to *drain the jug*, for which purpose he gave, with all the honours, "Live and let live."

Mr. BLACKER then said, the meeting surely would not separate without drinking the health of Mr. M'Anally, who had so well and so ably filled the vice-president's chair, which his much respected friend Mr. M'Kee had been prevented from occupying by a severe domestic calamity. Mr. M'Anally gave, in return, "the health of the countess of Gosford," to which his lordship having replied, said he would now give them a toast which had attracted his notice in a newspaper lately; he then gave, "Happy we meet, sorry we part, happy may we meet again."

After which his lordship and the other gentlemen rose to withdraw, and the entire company immediately separated.

No. 1.

Mr. Boyd's Statement.

"In the Townland of Ballymacoole, containing 386 acres, there have been sowed this year, 1838, being the first year of my commencement on Mr. Blacker's plan—

A. R. P.

16 1 26 of Clover.

11 2 15 of Vetches.

2 0 8 of Turnips.

2 0 32 of land has been reclaimed.

506 perches of drains have been made, and

84 perches of new fences.

In the Townland of Tullyguy, containing 294 acres—

19 0 20 have been sown in Clover.

10 2 0 in Vetches.

3 2 6 in Turnips.

1 2 25 reclaimed.

530 perches of drains made, and

130 perches of fences.

"In these townlands the above crops had been previously almost unknown by name, but had certainly not been cultivated; and having this year turned out very well, he had no doubt they would be sown to a much greater extent next year. His agriculturist was a very attentive man, and he consi-

dered the appointment of such a person indispensable to introducing any rapid improvement."

No. 2.

Statements handed in by Mr. Milne, from the tenants on Colonel Close's estate.

"Aughantaraghan, Nov. 10, 1838.

"My stock for last year consisted of 2 horses, 3 cows, 2 heifers, 2 ewes, and 2 sows, with some young pigs, house-fed upon two roods of vetches, sowed after rape; 2 roods clover and grass-seed, cut twice; 1 rood Italian grass, cut three times, and saved four bushels of seed; 1 acre and 2 roods of pasture, and some kail, was the feeding I had this summer, and all in good condition. I have about 2 acres and 3 roods of potatoes, a very good crop; the remainder of my farm I had in wheat and oats, a tolerable crop; with 1 acre of meadow. I can manure one-fourth part of my farm by adding soil and weeds to the manure heaps in summer, &c. I am so well satisfied with the four-course, house-feeding, and green-crops, that I mean to continue it.

"I have the honour to be, Sir, your humble servant,
"SAMUEL JEMERSON.

"To William Blacker, Esq., Gosford
Castle, Markethill."

"I feel grateful to you for the encouragement you give the tenants in trying to improve the system of farming. From the little experience I have of house-feeding, I can safely say that no farmer, under the old system, can keep his land and stock in good condition. I commenced sowing turnips four years back. The first year I had only 1 rood; the year following, 2 roods; the third year, 1 acre; and this year, $1\frac{1}{2}$ acre; and I can assure you that, from the system I follow, I derive great benefit. I farm 36 acres, I keep 11 head of black cattle, and a pair of farm horses, and all in fair condition; I keep them through the summer on clover and vetches, and in the winter months, I feed my cows on turnips. Since I commenced this system my cows give a great deal more milk and butter, and are in a higher condition in the end.

"In the year 1836, when I commenced the above, my farm was in a very poor state, hardly able to support my family and keep one cow, being a farm containing five English acres; but now am I glad to state, by the directions given me, I have one cow, one heifer, one calf, two pigs, all fed on $1\frac{1}{4}$ acres of clover, and saved off the same a four fathom cock of hay. I am endeavouring to get into the third course, which I think will get me into a better way. By the produce of house-feeding I will have no difficulty in manuring the third part of my farm every year. I have a very fine crop of all sorts this year, and by the directions given me and my own industry, I trust I will always be improving.—I have the honour, Sir, to be your obedient servant.

"SAMUEL WADDLE.

"To Wm. Blacker, Esq., Gosford."

"Cremore, 27th Oct., 1838.

"My farm contains 18 English acres, including nearly one acre of roads, on which I kept this season,
3 cows, fed on 1 acre clover;
1 horse, 2 roods vetches;
2 pigs, } 2 acres clover.
1 heifer, }

CROPS.

7 acres oats—500 stooks;

3 do. flax—a good crop;

3 do. potatoes;

2 roods turnips.

"I intend to go by the course 5 rotation as soon

as my farm is got in right order ; but as the one half is a purchase made in 1836, it will require additional draining and levelling of old ditches, which I intend to complete this winter. I have about the 5th part of my farm manured this season, and I hope to be able to add more to my stock next year. I find great benefit by sowing turnips for the cows, and intend to keep up the practice. Already have I benefited by your direction, and intending in future to follow the same, I have the honour to be your obedient servant,

"JOHN M'CLELLAND.

"Wm. Blacker, Esq., &c."

"Since the year 1835 I commenced the four-course system: my farm contains four acres, two roods, and fifteen perches, and at the stated time I had but one cow and two pigs on the whole farm. I had enough to do to feed them, but my farm is now possessed of two cows, two pigs, and a calf, all in good condition, which I am able to have plenty of food for both summer and winter, by the practice of house-feeding, green crops, and the increase of other crops. I have no difficulty to manure the fourth part of my land each year. I am so well satisfied with the plan that I do not mean to depart from the directions given me by Mr. Milne.—I have the honour to be, Sir, your obedient servant,

"WILLIAM MULLIN.

"Corcrum, 24th Oct., 1838.

"To Wm. Blacker, Esq."

I hold a farm containing ten acres of land; commenced the four-course system two years ago; since that time my stock has increased well. I have by the increase of cattle been able to manure the fourth part of my farm this year; my stock is three cows, one heifer, four pigs, all in good condition; the summer feeding was one-half acre of clover, saved one cock of hay, one rood of vetches, about one rood of pasture, manured land, two and a half acres of potatoes, one and a quarter rood of turnips. The rest of my farm was in oats, of which I had a very good crop. I have also levelled 37 perches of ditches, and instead made 37 and quicked, sunk one drain, four perches six feet wide, for clay, had it filled with stones. I have also reclaimed 25 perches of rocky hillock. I am well convinced of the benefit received from the four rotations, and conclude by saying I am content, and look forward to improve annually.—I have the honour, Sir, to be your obedient servant,

"HENRY CLARKE.

"Corcrum, October 21."

No. 3.

Extract from the Report of the Ashton Farming Society.

"The Inspectors award the prize to Mr. Thomas Winder, for his farm in Cleveley. It consists of 165 A. 1 R. 2 P., which they consider to be under very superior management; and they have great pleasure in inviting the society and other agriculturists to a personal inspection of it.

	A.	R.	P.
Meadow	27	1	29
Pasture	63	2	27
Clover Pasture	14	2	15
Clover Mown	2	2	34
Potatoes and turnips	3	3	13
Summer Fallow	0	2	5
	113	0	0

"The quantity of manure purchased is 40 tons; of lime 600 windles.

"The stock kept on the farm consists of 19 dairy cows, 10 two year old heifers, 7 yearlings, and 7

calves. All these are of the short-horned breed, and have been selected with much care and greatly to the credit of the owner's judgment. There are also on the farm 20 ewes, and 32 lambs their produce, 4 good pigs, 4 work horses, 1 two year's old colt and 1 yearling.

Mr. Bruce's return of Stock kept on 115 acres on the Gosford Estate.

Names.	Quantity of acres.	Cows.	Bulls.	Heifers.	Calves.	Horses.	Pigs.
1 Samuel Byers,	35	6	—	9	—	4	4
2 George Beaty,	5	2	—	—	—	—	2
3 Jacob Albin,	6	2	1	—	—	—	2
4 James Ralston,	12	3	—	—	—	—	2
5 James Bradford,	5	2	—	—	—	—	2
6 Robert Mac Common,	3	2	—	—	—	—	1
7 Wm. Campbell, one acre of this is too low for cultivation,	14	4	—	—	—	2	4
8 John Hogg,	12	3	—	1	—	1	1
9 Barkley Kinney, 2½ acres of this is in meadow, being too low for cultivation,	23	6	—	—	4	2	12
Total,	115	30	1	10	4	9	30

Extract from the Report of the Lancaster Agricultural Society.

"TO THE INSPECTORS OF FARMS OF THE LANCASTER AGRICULTURAL SOCIETY.

"A particular account of the system of husbandry practised on a farm, at Farleton, containing 147 A. 2 R. 27 P. statute measure :

	A.	R.	P.
Land in pasture	54	0	27
Meadow and seed grass	25	1	13
Wheat, Summer fallow	6	2	8
Barley sown with grass seed	26	1	36
Corn	18	1	2
Summer fallow	4	2	23
Turnips	7	1	28
Potatoes	1	0	0
Garden, orchard, and wood	3	3	0

"All the land I have in oats I generally grow crop, and Summer fallow the year following, except a field that has been turnips in the last round, this I sow with barley and grass seeds to lay one year, the year following oats, then green crop or Summer fallow again. I never sow wheat land down with grass seeds, but barley the year following sown down with grass seeds.

"Since my commencement on this farm, in 1838, I have burned yearly 700 bushels of lime, the last year but one 950 bushels, out of which 500 bushels was applied to pasture. I have bought 40 tons of manure yearly; the last Spring I bought 80 tons of manure. I have covered with compost 12 acres within the last three years, I have cut 155 roods of stone drains. I have diked 150 roods of old and new fences.

"THOS. SCOTT."

"Farleton, Oct. 6, 1838.

No. 4.

Extract of a Letter from J. Kirwan, Esq., of Castlehacket, dated 26th Dec., 1837.

"This has been a most favourable year for every thing, I have every reason to be thankful, under Providence, for the success with which all my undertakings have been attended. In point of advancement, we are some years behind. I had a great deal to contend with at first, not only from ignorant people, but from those who ought to have known better and at least encouraged the people to make a trial. Still I feel I have made some advance, and though I cannot say the system is flourishing (how could it in so short a time?) it has taken root, and is so deeply rooted, too, I trust, that it must flourish. I shall now tell you, as shortly as I can, what has been done. Forty-five sowed clover and rye-grass on potato soil, being altogether thirty-three acres, and nothing can promise better than the appearance of the young clover. I had much difficulty in getting it sown on the matured ground, but there will hardly be a tenant on the estate who will not have a field next year, and two or three who sowed it after oats and wheat are determined not to do so again, as it entirely failed. Twelve sowed turnips (mostly with bone dust) and eleven mangel wurtzel, and some of them are now feeding a cow, besides keeping an additional milch cow and a heifer, and there is a general feeling in their favour, so that if we can succeed in preventing their being stolen, I have no doubt of seeing them extensively cultivated before two years. I cannot tell the number of persons who sowed vetches, but I sowed four tons, which, at 16 stones to the acre, would sow forty acres; some of this was sown by persons in neighbouring estates, and they were all greatly pleased with them, and I have been paid most punctually. I got three tons from London and one from Dublin, and I sold them, the former at 2s. 1½d. per stone, and the latter at 2s. 3d., giving time till the middle of November for the payment. Next year I hope to have them cheaper. There were fifteen acres of grey and maple peas sown on fallow and exhausted soils, and the crop was very good; horses and cattle eat them greedily, but they are inclined to sell the peas and give the straw to their cattle, and they ought to pay from six to eight pounds to the acre. One gentleman near this gives his horses no oats, but feeds them entirely on pea straw and peas, and they are always in good condition; and the wheat, where the peas were grown, looks remarkably well now. I also sold flax-seed for 45 acres (late 3s. per stone), but no tenant sowed more than a rood, as they only grow it here for their own use, and not for market. This you will approve of, as I see you are not encouraging it with you. Altogether, I sold nearly 300*l.* worth of seeds, and all those I have asked have paid most punctually. The above seeds being high, I have given them time for the payment of them till May next, when they will be nearly fit to cut. The grass seeds I got from London from Gibbs, and paid too much for them. This year I must make a better bargain. I tried some Italian rye-grass, and it succeeded remarkably well; it is as green as any aftergrass in September. Thane, whom you sent me, is going on as well as I could wish. I look upon him as a very respectable man in his station, and the people are now beginning to understand and like him. He is a good surveyor, which has been of use to me in dividing farms, &c., and I find him a steady and experienced man. He brought over his wife and family last Summer. I have had maps made of most farms, and recommended the rotations which we thought advisable for each, and a good number are following our advice: I have

forced nothing; I have done everything by advice and persuasion. I imported 22 cwt. of English white seed wheat, which, I hope, in a year or so will improve the samples of wheat, as nothing could be worse than what they had, and there was an evident improvement in the state of their fallows, and in their seed wheat. I took an inventory of their stock at my commencement; and I am sure one taken now would show a great increase. This has been brought about by my loan fund of 600*l.*, which is working remarkably well: it paid 7½ per cent. for the year, and, after paying interest (of one per cent. only), expenses, &c., there was a net profit of 3 per cent. This year I expect to get some others to follow them, as our estate is sadly over-populated, though less so than most of our neighbours. I have done a good deal in the way of draining, dividing farms, straightening walls, &c., and have commenced a model farm of 13 acres, in the centre of the estate, which I intend to farm on the five-course shift. This year I had 5 roods of very good turnips in it, sown with bone-dust, which is a manure particularly well suited for getting a tenant into the turnip system the first year. I imported one hundred bushels of it, and they were at first all laughing at the idea of growing turnips with it. Next year I can get it at Galway, as they have put up a mill at the Gaol. I got some wooden ploughs made with metal mould-boards, and they are pleased with them; but we cannot get a well-shaped mould-board. I have now ordered a few on trial from Scotland. Do you recommend the small fans for cleaning corn, which I see advertised in your premium lists? Bruce told me they only cost 30s. and I would like very much to try one, as also one of the donkey-ploughs, if made of wood, as I have one made of iron which I got at L'Estrange's. There are many days often in this country when, for want of wind, they cannot clean their corn. I found great difficulty in getting the turnips and mangel wurzel crop sufficiently hoed and cleaned, but now they see the use of it. Bone manure ought to be dibbled in, and not sown with a machine. I had better turnips from some which I broke in this year than from what I got from London. A gentleman sent me nine mangel wurzel potatoes this year, which sowed one square perch of ground, and the produce was 3½ cwt., being at the rate of 28 tons to the Irish acre, and the largest return of any other kind in this country never exceeded 17 tons; and had mine been sown thicker, there would have been a greater return. I look upon them as a valuable root. I see you have got one or two crops of mangel wurzel returned at the rate of 38 tons to the acre, which astonished the fellows very much.

No. 5.

Extract from Mr. Birmingham's letter, as to the improvements on Lord Clonbrock's property.

"Carameena, Kilcennel, 29th October, 1838.

"I do not despair of yet having the system in full operation here ere long. This country is so well adapted to grazing, that it is more difficult to get the system of green crops, which requires labour, into operation, and the difficulty of fencing off the pastures is also a great bar, as the sheep get over the stone walls; I have, however, great reason to be satisfied with the progress we have made, for the tenants sow small patches of clover, mangel wurzel, rape, and Italian rye grass: this latter succeeds admirably, and is very beneficial, indeed; the arrears on the estate are much reduced, and the tenants most punctually pay for the seed, and lime

and ploughing. Their houses are very good, and Lord Clonbrock buys metal windows for them, from Messrs. Upple, of Birmingham, and gives them timber. The tenant pays for the rest, and I think a roomy good house is a great advantage. I wish we could follow the Belgian system in making butter and cultivating the land. You know they have no permanent pasture, and therefore they are forced to cultivate the green crops. Not a spot of land is left unsown. The moment the crop is off, another is put in. The urine from the cattle is preserved in tanks, and spread over the crop growing. In my mind they make the manure from the dairy yard go further than we do, by putting it immediately under the plant. I have seen this country twice, and am only just returned from it, and am satisfied that were the system pursued in Ireland, a man holding ten acres of land with us might become rich. Above all, the cleanliness and management of the dairy is wonderful. The consequence, as you know is that London is supplied in a great degree, with butter from Holland and Belgium, though Ireland might gain this trade to the amount of a million a year by a little more attention to the care of the dairy, and the feeding the cows. A farmer near Liege assured me that they were so nice about the feed of their milch cows that they gather up the dung off the fields every morning and then it is dried and spread out again on the pasture. They use carrots very much, and a fine food it is. They sow the carrot-seed with the corn, cut the stubble high; hoe well round the carrot in Autumn; carry off the stubble to the straw yard, and have a fine crop in the winter for the horses."

No. 6.

Statement of Captain Kennedy's Improvements.

"Loughash, Sept. 15, 1838.

"WM. BLACKER, ESQ.

"Being fully convinced of the interest you take in any plans proposed for the bettering of the condition of the poor farmers, permit me to give you a statement of the system introduced on the lands of Loughash, by J. Pitts Kennedy, Esq., whose exertions have been unremitting in spreading those practices of agriculture which ultimately cannot fail to produce the results which an improved system of tillage is capable of doing. In the Spring of 1834 I was employed by him to superintend a school for the instruction of the children in farming, and to instruct the tenants to sow turnips, and clover, and grass, who were so much opposed to it that they firmly believed that nothing of the kind could be raised in such a mountainous district. There is a model-farm of four acres attached to the school, where the children are instructed in the proper methods of cultivating the different kinds of crops, and the results, compared with the management pursued at home, which the children do not fail to communicate to their parents, are very important. By a simple explanation, they make an impression upon their parents' minds, which, perhaps, could not be effected by persons of maturer age. It was a general principle that I followed, never to let them sow any crop where I was not certain of success; and to let them see, from the previous year, upon the model-farm, the profit obtained of the crops raised upon it, compared with the produce of a similar portion of their own land; and now, after three years' trial, there are only three tenants on the property who have not adopted the rotation suited to their land; and where the one half of their farms were occupied in grazing may now be seen only the proper proportions in clover and grass. The improvement in cropping is not alone confined to Loughash, for on inquiry at the children who attend the School, I find

that out of *fifty-eight* families who send children from the neighbouring properties, *six* only have neglected sowing turnips, and the children themselves are generally the sowers and managers of these crops, and many of their fathers have told me that "they would not have sown turnips or clover had it not been for the advice of their children." It is inconvenient for the people to get these seeds, from their living so far from the market town. I purchased most of the turnip seed for them, and sold it at the same price for which I bought it. It is a general principle that to whatever system a person is bred in his youth he will not be likely to depart from it when he grows up: we may reasonably conclude from this that none of the children who have been bred to the proper system of farming will depart from it afterwards. Loughash townland consists of 1150 acres, about three-fourths of which, four years since, was under heath, and only giving support to a few miserable cattle, striving to gather a scanty subsistence. It has now been divided into farms, and let to tenants seven years, free, and after the seventh year, at a yearly increasing rent. It is generally the poorer description of *cottiers* from the neighbouring properties that take such farms, and such has been their progress, that ninety acres of it have now been reclaimed and giving food and employment to thirty families who have hitherto been depending for three-fourths of the year for their support upon the country. The first thing these people do when they take a farm, is to build a sod hut, which they live in whilst a stone one is building, for which suitable assistance is given. They reclaim the land in the following manner:—It is formed into ridges of six feet wide, and trenches between, from two and a half to three feet, out of which the bog is dug and laid upon the ridges over the sward to rot it; it then receives from 40 to 50 barrels of lime to the acre, and over the lime a covering of clay is laid, if it can be got out of the trenches, or if not, it is carried on it from the most convenient places. The first operation is generally performed in the Summer, it remains in that state till November, when it receives the liming and claying: in the following Spring the sward is completely rotted, when it is fit for planting with potatoes which, with a little manure, generally produces a good crop. They generally keep an acre trenched a year before they put a crop in it, when the sward is well decomposed, and much easier wrought with the spade, and consequently produces a much better crop of potatoes than if planted immediately after the first operation. In conclusion, I can inform you that *there is no one idle in the property, and no beggar, nor has there been a single lawsuit or law proceedings against any one on the property for the last four years.* Hoping that the same may yet be said of the greater part of Ireland, I remain, Sir, your obedient servant,

"JAMES MOORE."

"11th Dec., 1838.

"I have made an experiment of furrow draining on a small piece of land containing one rood and three perches; the above drains were made in potato ground; the potatoes being dug out, I began to sink the drains in every second furrow, thirty inches deep, nine at bottom, and filled the same sixteen inches deep with stones, which left fourteen inches to the surface; the stones which filled those were got in the drains or convenient to them.

"The number of perches of drains put in this piece of ground were thirty-nine, at threepence per perch, or 9s. 9d. in all. Total expence, 9s. 9d.

"WM. HERD.

"To Wm. Blacker, Esq."

ENGLISH AGRICULTURAL SOCIETY.

The first general meeting of this Society, was held on Tuesday, Dec. 18, at the Society's rooms, No. 5, Cavendish Square. The Right Hon. the Earl Spencer, President of the Society, took the chair. There was a full attendance of members, and amongst those who were present, we noticed his Grace the Duke of Richmond, the Earl of Euston, Lord Moreton, H. Handley, Esq., M.P., T. L. Hodges, Esq., M.P., E. Cayley, Esq., M.P., J. W. Childers, Esq., M.P., E. C. Buller, Esq., M.P., W. G. Hayter, Esq., M.P., Col. Challoner, Rev. J. R. Smithies, Messrs. J. Ellman, T. R. Barker, C. Hillyard, J. Buckley, D. Barclay, H. Boys, W. F. Hobbs, W. J. Patterson, W. Youatt, F. Burke, T. Chapman, and a great number of other gentlemen of the highest respectability, connected with agricultural pursuits.

The noble CHAIRMAN in opening the business of the day, said, that the present was he might say, the first meeting of the Society since its original formation. During the period which had intervened since the Society was first formed, various committee meetings had been held, and much had been done, but from the shortness of that period, many things were necessarily yet to be attended to. The committee however had agreed to, and prepared a report which would be read to the meeting, and which disclosed the present state of the affairs of the society. He was sure that the report would be highly satisfactory to them, as from it, they could perceive that the funds of the society were in a flourishing condition, and that it was likely to do well. (*Cheers.*) After the report should be read, he considered it would not be necessary to detain the meeting by any observations upon the state of the affairs of the society, as the report itself, would be found to be so full and explanatory. It was necessary however, for him to touch upon one or two points, which were not mentioned in the report, and which had in fact been agreed to after the report had been prepared. It had been agreed that a quarterly journal of their proceedings should be published, the first number of which, he had to announce, would appear as soon as possible. This journal, it was intended, should contain the prize essays, and other matters connected with their institution, and the pursuits of agriculture generally. It had been suggested, and he was glad to be enabled to announce, that the state of the funds was consistent with the adoption of the suggestion, that the numbers of this journal, should be delivered to each of the subscribers, and members of the institution gratuitously, on application to the secretary (*cheers*), and to those who were not members, it would be sold at a reasonable price. Perhaps they might consider that the committee had acted rather too boldly in coming to this determination, but it was done for the purpose of disseminating as widely as possible, information upon agricultural subjects, and to give to the members of the society, peculiar advantages of obtaining that information. Such was the intention of the committee, and he, (Earl Spencer) thought the meeting would say with him, that they had decided rightly in determining to deliver the new quarterly journal gratis to each member. (*Hear and cheers.*) It was unnecessary for him to say more and they would now proceed to business. His Lordship then read the following

REPORT OF THE COMMITTEE.

"In making this, their first report, your committee cannot refrain from noticing that the short space of time which has elapsed since the establishment of the

English Agricultural Society, has necessarily limited the sphere of their labours, and has, in fact, precluded them from doing much more than laying the foundation for future operations; but being anxious that such steps as they have taken for promoting the objects of the society should be submitted to those who placing confidence in them, have entrusted to their care the important duty of conducting its affairs, they deem it a duty incumbent upon them to lay before the subscribers the result of their management since their appointment on the 27th of June last. They cannot, however, proceed to the statement of their own labours without first tendering their thanks to the provisional committee for the valuable exertions made by them in framing rules for the general conduct of the society. As, however, must be the case in every institution which embraces an extensive field of operation, it would be impossible for any single committee, however diligent and zealous, to attend to all the details of the business to be transacted, one of the first acts of the committee was the appointment of sub-committees to carry into effect the objects of this institution. One of these sub-committees, whose province it was to frame additional rules for the government of the English Agricultural Society, has suggested many valuable rules, which have been adopted. It will shortly resume its sittings, and will direct its attention to framing such further rules and regulations as the daily-extending connections of the society may render necessary.

"Being desirous, as early as possible, to enlist talent in the investigation of those subjects which involve matter of deep interest to the practical farmer, prizes for essays upon a variety of topics have been offered, some of which will be awarded this day, some at the meeting at Oxford next year, and others at the country meeting to be held in the year 1840. The majority of those prizes are upon subjects directly calculated to improve the cultivation of the soil, an object regarded with special interest by the English Agricultural Society. The prizes for cattle to be given at the Oxford meeting, and through which improvement in the breeding of stock is mainly contemplated, will be publicly announced in a few days; and your committee trust that the owners and occupiers of land in Oxfordshire and the neighbouring counties will co-operate in rendering the first meeting of this society efficient for the objects for which it was instituted.

"Aware of the immense loss sustained in consequence of the want of better knowledge in the treatment of the diseases of cattle, sheep, and pigs, the attention of the committee has been turned to this subject, in order, if possible, to devise means for supplying the deficiency. A veterinary school has been long established in the neighbourhood of the metropolis, and it has been most useful in teaching the scientific and successful treatment of the diseases by which thousands of horses used to be destroyed; but its attention has been almost exclusively devoted to the horse; and it was considered that if its labours could be directed with the same success to the management in health and disease of our cattle and sheep, it would be of inestimable advantage to the British farmer.

"Application has been made to the governors of the Veterinary College, stating the anxious wish of the English Agricultural Society that this most important extension of its inquiries and its benefits should take place, this society not interfering with the arrangements or proceedings of the governors of the college, but contributing from its funds to the accomplishment of this purpose.

"A most valuable answer has been received from some of the governors; and a meeting will soon take place between them and a delegation of your committee, from which the happiest results may be anticipated.

"Correspondence with agricultural, horticultural, and other scientific societies, both at home and abroad, being one of the means proposed whereby useful information may be obtained, a proposition has been made for opening a correspondence with several societies at home, from most of which, but most especially from the Highland and Agricultural Society of Scotland, your

committee has received the strongest assurances of a desire to establish a friendly communication with your institution.

"Through the assistance of an able member of your society, who has recently been travelling on the continent of Europe, arrangements have been made for opening a correspondence with the Royal and Central Agricultural Society at Paris, the Royal Agricultural Society at Lyons, the Agricultural Society at Geneva, and the Agricultural Society at Lille.

"The diffusion of agricultural information being one of the most important means whereby the English Agricultural Society hopes to attain the objects contemplated by its establishment, diligent consideration has been given to this subject, and your committee feels confidence in stating that early in the coming year a plan will be adopted for circulating as extensively as possible such papers as may be deemed calculated to furnish useful information to the farmer.

"Upon referring to the report made by the provisional committee on the 27th June last, it will be seen that at that time the number of governors who had joined the society was 186, of whom 65 were life governors, and 121 annual subscribers of five pounds each. That there were in addition 280 members, of whom 31 were life members and 249 annual subscribers—making a total of 466. That the sum received amounted to 2,526*l.* 1*s.*, and that there had been expended about 130*l.*, leaving a sum of 2,396*l.* 1*s.*, in the hands of the bankers, Messrs. Drummond and Co., besides a further sum of 2,057*l.* due from subscribers.

"At the present time the number of governors is 206, of whom 68 are life governors and 138 annual subscribers of 5*l.* each. There are besides 484 members, of whom 46 are life members and 438 annual subscribers, making a total of 690, and exhibiting an increase of 224 since the 27th of June last.

"Your committee have the pleasure to announce that a considerable number of new subscribers are about to join the society; and the attention of local societies being daily more and more directed to it, a further accession of subscribers may be fairly reckoned upon.

"The sum already received for subscriptions amounts to 3,739*l.*, and there has been expended 676*l.* 13*s.* 7*d.*, leaving a balance of 3,062*l.* 6*s.* 5*d.* in favour of the society, besides the further sum of 1,196*l.* in the course of collection.

"The income of the society arising from annual subscriptions now amounts to 1,128*l.* The receipts and expenditure since the establishment, as exhibited in a balance sheet, examined and approved by your finance committee, stand as follows:—(Here his lordship read the financial statement, the general results of which are contained in the report.)

"Your committee cannot conclude their report without making grateful mention of those subscribers who have kindly enabled the society to commence the formation of a library by presenting useful works."

The Noble EARL added, that this satisfactory state of the finances would justify them in sparing no expence in the promotion of agricultural knowledge; at the same time they should be as economical as they could where expense was not essential. (*Hear, hear.*) The Noble Earl then said he had to ask the Meeting to adopt the report which had been read, and the question having been put, the report was adopted unanimously.

His Lordship next proceeded to announce the prizes which had been adjudged. The first prize was one of fifty sovereigns, or a piece of plate of that value, "for the best account of the improvements which have taken place in the agriculture of Scotland since the formation of the Highland Society." And here, his Lordship observed, he thought it right to state to the meeting the mode adopted by the judges in appropriating the prizes. The candidates forwarded their essays, with a motto attached to each, but without the name and address of the candidate. The name and address were con-

tained in a sealed envelope accompanying the essay, and which was not opened until after the judges had given their decision. Upon the decision of the judges being ascertained, the envelopes containing the names and addresses of the unsuccessful candidates were not opened, so that they were not known. Three judges had been appointed by the committee, who resided in the country, and had no communication with each other on the subject of the prizes; the essays were forwarded to them at their respective residences, and they then forwarded their decisions, sealed, to the committee. The first prize of fifty sovereigns, or a piece of plate, for the best account of the improvements which have taken place in the agriculture of Scotland since the formation of the Highland Society, had been awarded to Mr. John Dudgeon, of Skylaw, near Kelso.

The second prize was for the best account of the black caterpillar, and of the best mode of preserving the turnip from its depredation.

The third prize was twenty sovereigns, or a piece of plate of that value, for the best account of the simplest and cheapest processes for analysing soils. This prize had been awarded to the Rev. W. L. Rham, of Winckfield, Berks.

The fourth prize was twenty sovereigns, or a piece of plate of that value, for the best essay on the present state of Agricultural Mechanics, and on the improvement of which the various implements now in use may be susceptible.

The essays for the second and fourth prizes not being considered to possess sufficient merit, no prize was awarded to them.

His LORDSHIP then read the list of prizes which would be given at the next meeting of the Society, at Oxford, in 1839, for live stock (and which list the Noble Earl stated would be published shortly.)

Those (continued his Lordship) were the prizes the Society offered for award at the Oxford Meeting, the meeting would see that the amount was considerable. The prizes offered for Live Stock, it might be thought, amounted in the aggregate to more than was exactly consistent with the objects of the Society, which was formed more for the advancement of agricultural and scientific knowledge. Yet when it was considered that it was material to the progress of the Society that the meetings in the country should be well attended, and that it formed the chief attraction of such meetings, it was highly desirable that there should be as good an exhibition of cattle as possible. Though it might appear to be a large sum of money to give for the breeding of live stock, he (Lord Spencer) thought it would not only be money judiciously expended, but good economy to do so.—(*Cheers.*)

After the reading of the several documents, which appeared to give much satisfaction, his lordship resumed his seat amidst great cheering.

The Rev. J. R. SMYTHIES said, that the list of prizes which had been read by the noble chairman was, he thought calculated to give satisfaction generally, but there was one prize which he was anxious to have added to the list—one which he was sure the meeting would consider of great importance. It was to be recollected that the Society was formed more especially for the purpose of promoting improvement in the science of agriculture. They were all aware that old age brought with it decay in vegetable as well as animal life, it therefore became desirable that the quality of grain which was subject to decay, should be improved as much as possible; that a new grain should take the place of that which was worn out, and exhausted by frequent reproduction. There was, it was well known, a great anxiety

felt by the farmer with regard to the culture of wheat, the first staple commodity of the country. The proposition, or rather suggestion which he had to make, and upon which he would claim the consideration of the Society was, (if the funds would permit) that a prize of twenty guineas should be offered for a new variety of wheat. (*Hear, hear.*) The sample he proposed should be tested by the certificate of its grower, as to its hardihood, productiveness, and applicability to different soils, and its quality by the miller who should have converted it into flour. (*Hear, hear.*) He (Mr. S.) thought that this was the most desirable prize the Society could offer, and would, he entertained no doubt, create a spirit of enterprize amongst the farmers, and in the end contribute materially to the improvement of the grain. The English farmer they all knew, was liberal of his money, and at all times willing to bestow the utmost labour and care, upon the means of increasing the productiveness of his estate, but at the same time he was exceedingly sensitive on the score of ridicule, and the unambitious men around were always all ready to laugh at the failure of the experiments which their more enterprising neighbours might set on foot. (*Hear, hear.*) He believed there were no persons more imposed upon than the farmer by the advertising quackery of new varieties of vegetables. (*Laughter.*) One of these impositions he (Mr. S.) could not help mentioning, because he considered it to be the grossest that ever was practised upon any body of men in the world. He had no hesitation in saying he alluded to the *Cæsarean Cow Cabbage*. (*Loud laughter and Cheers.*) He had seen it planted in various gardens in the highest state of cultivation, and in every instance it had totally and completely failed. It did not contain any one of the properties it was at first said to possess. He stated this fearlessly amongst them all, as he was an opponent of all humbug, and he wished to expose this imposition wherever he could. (*Hear, hear.*) He would therefore beg to suggest to the consideration of the noble Chairman of the meeting the subject he had mentioned, and when the Society became richer, then offer similar prizes for new varieties of barley and oats. (*Hear, hear.*)

Mr. HILLYARD seconded the proposition.

Earl SPENCER said he admitted he was much of the same opinion as the reverend gentleman on this subject. He however reminded him that the Society had already offered a prize of twenty sovereigns for the most approved varieties of wheat.

The Rev. Mr. SMYTHIES observed that the reward offered by the Society was not for a new variety of wheat, but only for the best account of the varieties already known in England.

Earl SPENCER read the announcement of the prize of twenty sovereigns or a piece of plate "for the best account of the varieties of wheat hitherto introduced in England." The competitors were to state, 1. The mode of procuring the sorts of wheat described. 2. Their culture, viz., preparation and quantity of the seed. 3. Hardihood and power to withstand severe weather. 4. Early maturity and time of severance of crop. 5. Tendency to degenerate, and liabilities to disease. 6. Amount of produce in grain, chaff, and straw, and the relative quantities and qualities of flour and offal. This prize would be given at the Oxford show.

The Rev. Mr. SMYTHIES thought the matters stated went too much into detail for the practical farmer, and therefore he feared it would not come to much.

Mr. BARKER begged to suggest to the Rev. Mr. Smythies whether the proposition he had made might not be left to the discretion of the Committee. He

thought the proposition as it now stood would not be productive of the good effect which the rev. gentlemen seemed to contemplate. They would no doubt have samples from all parts of the kingdom, which would look well to the eye, but then they would have no information as to the method of culture, or the applicability of the samples to the different soils, and thus people would go away without any accession of knowledge on the subject. Under these circumstances he thought it might be safely left to the Committee, who would decide whether they would offer such a prize for another year. He merely threw out these observations for the consideration of the rev. gentleman, and not by way of opposition to his suggestion, with the principle of which he agreed.

Rev. Mr. SMYTHIES reminded Mr. Barker that he had at the outset proposed that the quality of the wheat should be ascertained by the certificates of those who had grown it in different soils. He had however no objection to move his proposition in the shape of an instruction to the Committee.

A MEMBER thought it was incompetent for the Committee to entertain the suggestion at present.

Mr. DEAN considered the subject to be of the highest importance to the Society.

Earl SPENCER thought at all events the suggestion of the Rev. Mr. Smythies should be taken into consideration by the Committee, but there were details necessarily connected with the proposition, which could not be entered into and decided upon at that meeting.

The conversation here terminated, it being understood that the carrying into effect of the suggestion should be left to the discretion of the Committee.

A MEMBER moved that the sum placed at the disposal of the Committee for prizes for extra stock, implements, seeds, roots, &c., should be increased from 50 to 100 sovereigns.

Mr. DEAN seconded this proposition.

The Noble CHAIRMAN saw no objection to the proposal. Although the sum of 50 sovereigns had been appropriated by the committee as the aggregate of the prizes for this class, yet it did not follow, even though they had the power to award 100 sovereigns, that they were compelled to dispose of the whole amount. The committee would however take the suggestion into their serious consideration.

W. L. HODGES, Esq., M.P., rose to ask what prizes were to be offered for wool, and the encouragement of that great staple article of the country.

Earl SPENCER said he apprehended that no judge or person pretending to be a judge, would decide upon the merits of the sheep without considering the quality of the wool (*hear, hear*). It had been suggested by a member that unless the wool was produced the judges would not be able to decide upon its quality. Now this suggested a difficulty as to the period of exhibition, sheep could not be kept unshorn after the 17th of July, and therefore it was intended, as it was stated in the list of prizes, that the sheep should be shorn some time previous to the day of exhibition. The judges would thus be enabled to come pretty nearly to a correct decision upon the quality of the wool. As to exhibiting fleeces not attached to the sheep, and which might not belong to them, he thought that would be a dangerous proceeding. (*Laughter.*)

The Noble CHAIRMAN observed that he had certainly seen this done, where sheep were sold to be sent abroad, and in such cases, he need not say that the place upon which the wool was left was behind the shoulders.

Mr. J. ELLMAN thought that if the exhibitors who produced the wool pledged their word of honour that the wool belonged to the sheep exhibited, the judges would be warranted in giving their decision upon its quality. There might be a difficulty even in such cases, but he really thought that if the question was fairly put

to the exhibitor, no gentleman would pledge his honour to an untruth. (*Hear, hear.*)

Earl SPENCER suggested that the matter might more properly be left for the consideration and discussion of the committee.

Mr. ELLMAN merely stated his view of the subject, in the hope that it might be brought under the consideration of the committee at a future period.

Mr. BARKER said that with respect to the prize offered for the ten bullocks, he wished to throw out a suggestion for the consideration of any member present who might feel disposed to make any observation upon it, whether the number might not with advantage be reduced to five. He thought this would be likely to produce greater competition amongst graziers. The number now required to be exhibited, would, he apprehended, have the effect of deterring any but large graziers from bringing prime bullocks to the exhibition.

A MEMBER at the end of the room, concurred with Mr. Barker in the propriety of his suggestion, and agreed with him in opinion that if the number of bullocks were reduced, it would be much more likely to create a spirited competition, than if it remained as at present fixed by the committee.

Mr. BARKER said, that what he had in view in making the suggestion was, the great expense attending the conveyance of so large a number to the show, an expense which many graziers were unable or would be unwilling to encounter; and thus one great end, for which the English Agricultural Society was formed, that of inducing extensive competition, would be defeated.

The Noble PRESIDENT said, that this subject would be taken into consideration by the Committee.

His Lordship then said, the next business for the meeting to transact was to propose subscribers. They were aware that the subscribers were elected by the Committee, but it was competent for any member to propose gentlemen for election. He should, therefore, be happy to receive proposals from the members present.

Numerous proposals were then handed in to the Secretary, after which

The Duke of RICHMOND rose and said, the business of the meeting being now concluded, he begged leave to propose, that the marked thanks of the Society be given to their noble president, Earl Spencer, who had taken great pains not only to forward the interests of agriculture generally, but also the objects of the Society. Lord Spencer was entitled to the thanks of the meeting for his valuable services in forming the Society, and for his frequent attendance at the committee meetings since its formation. (*Cheers.*) He, therefore, begged to propose, that the marked thanks of the Society should be given to his lordship, and that the meeting should be adjourned to some day in May or June next, to be fixed by the Committee.

E. CAYLEY, Esq., M.P., seconded the motion with great pleasure. He thought that the Society had great reason for congratulation, on the very full attendance at the meeting of that day, and the kind and unceasing attention of the noble chairman to their proceedings. He also congratulated the meeting upon the extremely good spirit which was manifested on the previous day at the Smithfield Club dinner towards the English Agricultural Society. (*Cheers.*) He had no doubt that their Society would continue to go on and prosper. (*Cheers.*) With respect to the suggestion made by the Rev. Mr. Smythies, he thought it was a highly valuable one, and could not have too much attention paid to it. (*Hear, hear.*)

The motion of thanks to the Noble Chairman was then put and carried amidst loud cheers.

Earl SPENCER begged to return his most sincere thanks for the manner in which they had been pleased to compliment him. He acknowledged he was certainly most anxious for the success of the Society, and whatever power he could make use of in contributing to and completing that success, he would cheerfully exercise. (*Cheers.*) Nothing gave him greater pleasure than to find that he stood well with the people of England generally, but more particularly with the farmers. (*Cheers.*)

His lordship then announced, that the meeting stood adjourned to a day in May or June next, to be fixed by the committee. The day for the next annual meeting was afterwards fixed by the Committee to take place on Wednesday, May 22, 1839.

The meeting then separated.

PRIZES OF THE ENGLISH AGRICULTURAL SOCIETY,

MEETING AT OXFORD, JULY 17, 1839,

OPEN TO ALL ENGLAND,

FOR IMPROVING THE BREED OF CATTLE.

CLASS I.—SHORT-HORNS.

1. To the owner of the best Bull—Thirty Sovereigns.
2. To the owner of the best Cow in milk—Fifteen Sovereigns.
3. To the owner of the best in-calf Heifer, not exceeding three years old—Fifteen Sovereigns.
4. To the owner of the best Yearling Heifer—Ten Sovereigns.
5. To the owner of the best Bull Calf—Ten Sovereigns.

CLASS II.—HEREFORDS.

1. To the owner of the best Bull—Thirty Sovereigns.
2. To the owner of the best Cow in milk—Fifteen Sovereigns.
3. To the owner of the best in-calf Heifer, not exceeding three years old—Fifteen Sovereigns.
4. To the owner of the best Yearling Heifer—Ten Sovereigns.
5. To the owner of the best Bull Calf—Ten Sovereigns.

CLASS III.—DEVONS.

1. To the owner of the best Bull—Thirty Sovereigns.
2. To the owner of the best Cow in milk—Fifteen Sovereigns.
3. To the owner of the best in-calf Heifer, not exceeding three years old—Fifteen Sovereigns.
4. To the owner of the best Yearling Heifer—Ten Sovereigns.
5. To the owner of the best Bull Calf—Ten Sovereigns.

CLASS IV.—CATTLE OF ANY BREED OR CROSS,

Not qualified for the foregoing Classes.

1. To the owner of the best Bull—Thirty Sovereigns.
2. To the owner of the best Cow in milk—Fifteen Sovereigns.
3. To the owner of the best in-calf Heifer, not exceeding three years old—Fifteen Sovereigns.
4. To the owner of the best Yearling Heifer—Ten Sovereigns.
5. To the owner of the best Bull Calf—Ten Sovereigns.

CLASS V.—CATTLE FOR DAIRY PURPOSES.

1. To the owner of the best Cow in Milk, which shall, in the opinion of the judges, be best calculated for dairy purposes—Fifteen Sovereigns.

To the owner of the second best Cow—Ten Sovereigns.

N.B. In awarding these Prizes the Judges will be requested to take into their consideration not only the quantity and quality of the milk which the cow gives, but also her value, to feed after she shall have been dried.

CLASS VI.—OXEN.

1. To the owner of the five Oxen bought since the 1st of September, 1838, likely to weigh more than 70 stone and upwards, at Christmas, 1839, which in the opinion of the Judges will pay best for grazing—Twenty Sovereigns.

2. To the owner of the five Oxen bought since the 1st of September, 1838, not likely to exceed 70 stone weight at Christmas, 1839, which in the opinion of the Judges will pay best for grazing—Twenty Sovereigns.

CLASS VII.—HORSES.

1. To the owner of the best Cart Stallion—Twenty Sovereigns.

2. To the owner of the best Cart Mare and Foal—Ten Sovereigns.

3. To the owner of the best Stallion for breeding hunters, carriage horses, or roadsters, which shall have served mares during the season of 1839, at a price not exceeding 3*l.* each—Thirty Sovereigns.

SHEEP.

PRIZES FOR IMPROVING THE BREED OF SHEEP.

CLASS VIII.—LEICESTERS.

1. To the owner of the best Shearling Ram—Thirty Sovereigns.

To the owner of the second best do.—Ten Sovereigns.

2. To the owner of the best Ram of any other age—Thirty Sovereigns.

3. To the owner of the best pen of 5 Ewes with their Lambs—Ten Sovereigns.

4. To the owner of the best pen of 5 Shearling Ewes—Ten Sovereigns.

CLASS IX.—SOUTHDOWNS OR OTHER SHORT-WOOLLED SHEEP.

1. To the owner of the best Shearling Ram—Thirty Sovereigns.

To the owner of the second best do.—Ten Sovereigns.

2. To the owner of the best Ram of any other age—Thirty Sovereigns.

3. To the owner of the best pen of 5 Ewes with their Lambs—Ten Sovereigns.

4. To the owner of the best pen of 5 Shearling Ewes—Ten Sovereigns.

CLASS X.—LONG-WOOLLED SHEEP,

Not qualified to compete for Class VIII.

1. To the owner of the best Shearling Ram—Thirty Sovereigns.

To the owner of the second best do.—Ten Sovereigns.

2. To the owner of the best Ram of any other age—Thirty Sovereigns.

3. To the owner of the best pen of five Ewes with their Lambs—Ten Sovereigns.

4. To the owner of the best pen of five Shearling Ewes—Ten Sovereigns.

N. B. The sheep exhibited for any of the above Prizes must not be shorn before the 1st of May, nor after the 1st July, 1839.

CLASS XI.—PIGS.

1. To the owner of the best Boar.—Ten Sovereigns.

2. To the owner of the best Sow—Five Sovereigns.

3. To the owner of the best pen of 3 Pigs, of the same litter, above 4 and under 9 months old—Ten Sovereigns.

CLASS XII.—EXTRA STOCK, IMPLEMENTS, ROOTS, AND SEEDS.

For Extra Stock of any kind, not shown for any of the above Prizes, and for Implements, Roots, Seeds, &c. Prizes will be awarded and apportioned, by the Committee and Judges, to the value, in the whole, of Fifty Sovereigns.

Gentlemen wishing to enter into any Sweepstakes, to be decided by the Judges at the Show, are requested to apprise the Secretary of their intention.

N. B. Whenever the word stone occurs it is to be considered as the imperial stone of 14*lbs.*

SEED WHEAT.

To the Exhibitor at the Oxford Meeting of the best 12 bushels of White Wheat, of the harvest of 1838, grown by himself—Fifty Sovereigns.

To the Exhibitor at the Oxford Meeting of the best 12 bushels of Red Wheat, of the harvest of 1838, grown by himself—Fifty Sovereigns.

N. B. These Prizes will be awarded at the General Meeting in December, 1840.

No Stock can be admitted for Exhibition unless the necessary Certificates, signed by the Exhibitor, in the form prescribed, be delivered to the Secretary, on or before the 1st July next. Certificates may be had on application to the Secretary, 5, Cavendish-square.

PRIZE ESSAYS FOR THE YEAR 1839.

1. DRAWING TURNIPS.

Ten Sovereigns, or a Piece of Plate of that value, will be given for the best account of the advantages of drawing Turnips from the Land, and consuming them in Houses or Yards.

Competitors must state—

1. The best mode of drawing and carrying turnips both from light and heavy soils.
2. The means of avoiding any injury to the future crops from cutting up the land in carting, more particularly in clay soils.
3. The best mode of supplying the loss of manure arising by the turnips not being consumed on the land.
4. The comparative progress of stock in fattening or thriving, when consuming drawn turnips or those still on the land.
5. The comparative quantity and quality of the manure in either of the above modes.
6. The expence of drawing.

2. WHEEL AND SWING PLOUGHS.

Ten Sovereigns, or a Piece of Plate of that value, will be given for the best Essay on the comparative advantages of Wheel and Swing Ploughs.

3. WATERMEADOWS.

The Society's Gold Medal will be given for the best account of the formation and management of Watermeadows, founded on actual experience.

Competitors must give—

1. A description of the water and its qualities.
 2. The means by which it has been collected and brought to the meadow.
 3. The quantity and quality of the grass mown, and the purposes for which used.
 4. The amount of stock (if any) depastured, and at what time of the year.
 5. The botanical and common names of the grass growing.
 6. The expence of formation and management.
- The size of the water-meadows described must be not less than five acres.

4. VARIETIES OF WHEAT.

Twenty Sovereigns, or a Piece of Plate of that

value, will be given for the best account of the most approved varieties of Wheat hitherto introduced into England.

Competitors must state—

1. The mode of procuring the sorts of Wheat described.
2. Their culture, viz., preparation and quantity of the seed; time and method of sowing; relation both as to preceding and following crops, and as to varieties of soil.
3. Hardihood and power to withstand severe winters.
4. Early maturity and time of severance of crop.
5. Tendency to degenerate, and liabilities to disease.
6. Amount of produce in grain, chaff, and straw, and the relative quantities and qualities of flour and offal.

5. KEEP OF FARM HORSES.

Twenty Sovereigns, or a Piece of Plate of that value, will be given for the best account of the cheapest way of keeping Farm Horses, both in Winter and Summer.

Competitors must state—

1. The quantity of food given, and the average price or value of such food.
2. The work performed by the horses.
3. The length of time they have been kept on the food described.
4. And whether kept in yards, or stables, or in pastures.

6. RURAL ECONOMY ABROAD.

The Society's Gold Medal and Twenty-five Sovereigns will be given for the best account of Rural Economy Abroad.

7. STALL-FEEDING CATTLE.

Twenty Sovereigns, or a Piece of Plate of that value, will be given for the best account of Stall-feeding cattle.

8. WINTER AND SUMMER MANURE.

Ten Sovereigns, or a Piece of Plate of that value, will be given for the best account founded on actual experiment of the comparative qualities of Winter and Summer-made Manure.

Competitors must state—

1. The comparative value of fold-yard manure made from green food and litter during the summer months, or that produced by roots and litter during the winter, in strength, richness, and durability with reference to the crops to which they are respectively applied.
2. The general economy of the respective processes.

9. LIQUID MANURE.

Ten Sovereigns, or a Piece of Plate of that value, will be given for the best account of Liquid Manure.

10. COMPOST HEAPS.

Ten Sovereigns, or a Piece of Plate of that value, will be given for the best mode of making Compost Heaps.

These Essays must be sent in to the Secretary on or before March 1, 1839.

AGRICULTURAL IMPLEMENTS.

1. DRAINING PLOUGH.

Fifty Sovereigns or a Piece of Plate of that value, will be given for a Plough which shall have been proved, to the satisfaction of the Society, to be adapted for the cheap and effectual cutting of drains intended to be constructed with tiles, stones or other materials, with the least injury to the neighbouring surface of the field.

ENGLISH AGRICULTURAL SOCIETY.

PRESIDENT—EARL SPENCER.

TRUSTEES.

Acland, Sir T., Bt., M.P.	Lawley, Sir F., Bart.
Clive, Hon. R., M.P.	Neeld, J., Esq., M.P.
Downshire, Marquis of	Richmond, Duke of
Grafton, Duke of	Rutland, Duke of
Graham, Sir J., Bt., M.P.	Spencer, Earl
Handley, H., Esq., M.P.	Sutherland, Duke of

VICE-PRESIDENTS.

Bedford, Duke of	Morgan, Sir C., Bart.
Chichester, Earl of	Northumberland, Duke of
Exeter, Marquis of	Portman, Lord
Fitzwilliam, Earl	Talbot, Earl
Gooch, Sir Thos., Bart.	Wellington, Duke of
Moreton, Lord	Worsley, Lord, M.P.

COMMITTEE OF MANAGEMENT.

Acland, T. D., M.P.	Hillyard, C.
Barclay, D.	Hobbs, W. Fisher
Barker, T. R.	Johnstone, Sir John, Bart.
Benett, J., M.P.	Kimberley, G.
Boys, H.	Kinder, J.
Blanshard, H.	Knatchbull, Sir E., Bart., M.P.
Buller, E., M.P.	Lefevre, C. S., M.P.
Buller, T. W.	Long, W., M.P.
Burke, F.	Miles, W., M.P.
Cayley, E. S., M.P.	Page, W. Woods
Challoner, Col.	Paterson, W. J.
Chapman, T.	Pell, E.
Childers, J. W., M.P.	Price, Sir R., Bart., M.P.
Conteur, Col. Le	Pusey, P., M.P.
Curteis, E. B.	Sanford, E. A., M.P.
Eliot, Lord, M.P.	Slaney, R. A., M.P.
Ellman, J.	Smithies, Rev. J. R.
Ellman, T.	Spencer, Hon. Capt., M.P.
Estcourt, T. H. S. B., M.P.	Thompson, H. S.
Euston, Earl, M.P.	Verney, Sir H., Bt., M.P.
Flounders, B.	Whitbread, W.
Grantham, S.	Wood, J.
Hall, Geo. Webb	Wright, J.
Hayter, W. G., M.P.	Youatt, W.
Heathcoat, J., M.P.	
Heneage, G. F.	

SECRETARY—Wm. Shaw, Esq., 5, Cavendish-sq.

PUBLISHER—John Murray, Esq., Albemarle-street.

BANKERS—Messrs. DRUMMOND and Co.

LIST OF SUBSCRIBERS.

*The Subscribers marked thus * are Governors, thus †* are Life Governors, and thus † Life Members; all others are Members only.*

Abbott, Thos.	Bailward, John
†* Acland, Sir Thos., Bt., M.P.	Baines, John
Acland, T. Dyke, M.P.	Baker, R. W.
Ade, Rev. John	Banger, Thomas
* Adeane, Henry John	Barber, R.
Aitken, —	†* Barclay, C.
Allix, Charles	†* Barclay, David
* Alston, Rowland, M.P.	Barclay, J. P.
* Alston, R. Gardiner	†* Baring, Hon. W. B., M.P.
* Amherst, Earl	* Baring, Sir T., Bart.
Anderson, Robert	* Barker, T. Raymond.
Andrews, Edwin	* Barker, J. Raymond.
†* Angerstein, J. J.	Barker, Geo.
* Antrobus, Sir E., Bart.	Barnard, R.
Appleby, L.	* Barneby, Jno., M.P.
Arbuthnot, Rt. Hn. C.	Barnett, Charles.
†* Archdeckne, E.	Barrington, Vis., M.P.
Arnot, David Gale.	Bates, Thos.
Astbury, W.	Bathurst, Earl
Astley, Sir J., Bart.	Baxter, Robert
Badcock, Benj.	Beach, Sir Michael
* Bagge, W., M.P.	Hicks, Bart.
Bailie, W. H.	Beasley, John

- Beaufort, Henry
 * Bedford, the Duke of
 Bedford, John
 * Bennett, J., M.P.
 Bennett, James
 Bennett, —
 † Benson, Rev. H. B.
 * Bevell, J.
 Bigg, T.
 Binnix, J. A.
 Birks, John
 * Bisshopp, James
 * Blachford, Fitz Roy
 Blackbourn, Davis
 † Blair, Jno.
 * Blake, —
 Bland, Dr.
 Bland, W.
 †* Blanshard, H.
 * Blount, W.
 Bolton, Lord
 * Bonsor, Jos.
 Boucher, Charles
 Bourne, George
 Bouverie, Edward
 †* Bowes, J., M.P.
 Boys, Henry
 Boys, R.
 * Bramston, T. W., M.P.
 * Braybrooke, Lord
 * Bridport, Lord
 Bromwell, Rev. R.
 Brookes, J.
 Brown, Francis
 * Bruges, W. H. L., M.P.
 Budd, Capt. Hopewell,
 R.N.
 †* Buller, Edward, M.P.
 * Buller, T. Wentworth
 Bulwer, Wm. Lytton
 * Bulteel, John
 †* Bunbury, Sir H., Bart.
 Burn, Ilderten
 Burnand, Wm.
 * Burrell, Sir C. Merrik,
 M.P.
 Burgess, Robert
 Burke, French
 * Burlington, Earl of
 Burt, Thos.
 Burt, Wm.
 Burt, James
 † Calcraft, J. H., M.P.
 Caldecote, R. M.
 Calthorp, Richard
 Calverley, T.
 Calvert, John W.
 †* Cambridge, H.R.H. the
 the Duke of
 Canniton, Geo., jun.
 Capper, —
 † Carew, W. H. Pole
 Carnegie, Rev. J.
 Carter, J. R.
 † Cator, Rev. Thos.
 †* Cavendish, Hon. Chas.
 Compton, M.P.
 * Cayley, Sir George, Bt.
 Cayley, E. S., M.P.
 * Challoner, Colonel
 Charlton, J.
 Chapman, T.
 Chapman, G.
 Charge, Thos.
 Chawner, Rich. Croft
 * Chichester, Earl of
 †* Childers, J. W., M.P.
 † Cholmeley, Sir M. J.,
 Bart.
 Christie, Langham
 †* Christopher, R. A.,
 M.P.
 † Chrystie, William
 Clarke, Rev. C.
 Clarke, Thos. E.
 Clarke, C. J.
 * Clay, W., M.P.
 Clements, Vis., M.P.
 * Clifford, Chas. T.
 †* Clive, Hon. Rob., M.P.
 Clode, W.
 Clutton, Thos.
 Clutton, Jno.
 Coleman, Professor
 † Compton, H. Coombe
 Connop, H. jun.
 * Cook, William
 Cooper, Thos.
 Cooper, J. G.
 †* Copeland, Ald., M.P.
 Cormack, William
 Cormack, Will. John
 * Cotes, John
 Cotterell, Sir J. Geers,
 Bart.
 Courtney, W.
 Craddock, Sheldon
 Cramp, Jno. M.
 * Crawley, Sam., M.P.
 Croft, Sir John, Bart.
 * Crompton, Sir Sam.,
 Bart., M.P.
 Cross, W. J.
 Cubley, Samuel
 † Cure, Capel
 * Curteis, E. B.
 * Curtis, W.
 * Dacre, Lord
 †* Davenport, E.
 Davenport, G.
 David, Evan
 Davies, D. S.
 Davis, William
 † Davis, Samuel
 Dean, James
 Deane, Ralph
 * De Beauvoir, R. B.
 † Denbigh, Earl of
 * Denison, W. J., M.P.
 Dennis, Robert
 De Visme, Rev. James
 † Dewing, R.
 * Dickinson, F. H.
 Dilke, Capt., R.N.
 Dixon, R. W.
 Dolphin, J.
 * Downshire, The Mar-
 quis of
 † Drax, J. S. W. S. E.
 Druce, S.
 † Drummond, A. R.
 * Drummond, George
 Drury, George
 Duckworth, John
 Duffield, Christopher
 * Dugdale, Wm. Strat-
 ford, M.P.
 Duke, W. E.
 * Duncombe, Hon. Wm.
 M.P.
 Dundas, Hon. T., M.P.
 Dyer, Geo.
 Edwards, Henry
 * Ebrington, Vis., M.P.
 †* Egerton, T. Wilbraham
 * Eliot, Lord, M.P.
 Ellman, John
 Ellman, Thomas
 Elwood, Lt.-Col. C. W.
 Enys, John Samuel
 * Essex, Earl of
 * Estcourt, T., H. S. R.
 M.P.
 †* Etwall, R., M.P.
 * Euston, Earl, M.P.
 * Evans, W., M.P.
 Ewen, Thos. L'Estrange
 †* Exeter, The Marq. of
 * Farquharson, J. J.
 Fellows, E., M.P.
 Filliter, George
 Finlayson, Dr.
 †* Fitzwilliam, Earl
 Flight, Thomas
 * Flounders, B.
 † Floyer, John
 * Foley, J. H. H.
 Fowlie, Wm.
 Franklins, Rd.
 * Freeman, W. Peere
 Williams
 Fryer, William
 Fuge, Robert
 Gardner, Rev. Chris.
 Gee, Thomas
 Gibbon, Alex.
 * Gibbs, Humphrey
 Gibbs, Thomas
 Gibbs, William
 Giddy, Charles, R. N.
 (Com.)
 Gilbertson, Matthias
 Gillett, Joseph Ashby
 Gilliat, Atkin
 Gills, W.
 * Gillies, Robert Maule
 Gladwin, Thomas
 Godfrey, Edward
 Godwin, John
 Godwin, Richard
 Gooch, Sir Thos. Bart.
 Good, George
 † Goodden, John
 Goodricke, Sir F., Bart.,
 M. P.
 * Gordon, R. M. P.
 † Goring, H. D. M.P.
 Goring, Mrs.
 Goring, Chas.
 Gorringer, J. P.
 Gorringer, Mrs. J. P.
 Gough, Frederick
 Gowing, E.
 Graburn, R. S.
 Grace, Rev. H. T.
 * Grafton, The Duke of
 †* Graham, Sir J., Bart.,
 M. P.
 Graham, Rev. H. G.
 Grantham, Stephen
 Green, —
 Greeve, Rev. G. W.
 * Greathead, E.
 Grey, W. H. C., F. R.
 I. S.
 † Gregg, Thomas
 * Gregory, Arthur F.
 Griffin, John
 Grimshaw, W.
 † Grove, Thomas
 * Guest, Sir J. Josiah,
 Bart.
 Gwilt, Rev. D.
 Hach, James
 Haines, Edward
 Hall, Geo. Webb.
 Halstead, Thomas
 Hamond, Wm. P.
 †* Handley, Henry, M.P.
 * Handley, W. F.
 †* Harcourt, Geo. S., M.P.
 * Harland, C., M.P.
 † Harrison, Richard
 Harvey, R. B.
 Haselfort, R. L.
 Hatherton, Lord
 Hayne, W.
 * Hayter, Wm. G. M.P.
 Hayward Drinkwater
 Heald, Dr.
 * Heathcoat, J. M. P.
 * Heathcote, Gilbert, T.,
 M.P.
 * Heathcote, Sir W. Bart,
 M.P.
 †* Heneage, G. F.
 Henning, James
 †* Herbert, Hon. Sidney,
 M.P.
 Hewer, Jasper
 Hewitt, Lieut., R.N.
 * Hewett, W. H.
 Heygate, Robert
 Hicks, Benjamin
 †* Hill, Sir Rowland,
 Bart., M.P.
 Hillyard, Clark
 Hinton, William
 Hobbs, Wm. Fisher
 Hobbs, Wm.
 Hobgen, Jos.
 * Hodges, T. Law, M.P.
 Hodgkinson, Rd.
 Hodson, W.
 Hodson, —
 Holbeach, William
 Holcombe, Rev. G. F.
 Holmes, Wm. Sand-
 croft
 Honey, Rev. J.
 Horlock, J. W.
 Hoskins, K. M.P.
 House, John
 House, John, jun.
 Howard, Charles
 Howard, G.
 †* Howick, Viscount, M.P.
 * Hulse, Sir C., Bart.
 †* Hulse, Lieut. Col.
 * Huntingfield, Lord
 †* Huntingtower, Lord
 * Hurst, R. H., M.P.
 Hurst, —
 Hutton, John
 * Hyett, W. H.
 Ide, John
 †* Ilchester, Earl of
 Inge, Captain
 Jackson, Hugh
 Jarratt, W.
 Jervis, Sir Raymond
 Jodrell, Sir R. Paul,
 Bart.
 Johnston, Sir F. Bart.,
 Johnston, John Hutton
 * Johnstone, Sir John,
 Bart.
 Johnson, Rev. Dr.
 Johnson, C. W.
 Jones, Wm.
 Kedward, J. D.
 * Kensington, Lord
 †* Kerrison, Lieut-Gen.
 Sir Edward, Bart,
 M.P.
 * Kenyon, Lord
 Kilson, Rev. H.
 Kimberley, G.
 † Kinder, J.
 Kinder, Thos.
 Kingsmill, William
 * Knatchbull, Sir Ed.,
 Bart., M.P.
 † Knight, H. Gally, M.P.
 * Lainson, Alderman
 John
 Langdale, Hon. C.,
 M.P.

- * Langston, J. H.
 * Lansdowne, The Marquis of
 †* Lawley, Sir F. Bart.
 Lawson, W. C.
 Le Couteur, Col.
 Lediard, Thomas
 † Lee, Lee, J.
 †* Lefevre, Charles Shaw, M.P.
 * Leigh, Chandos
 Lemon, Sir C., Bart., M.P.
 Lethbridge, Sir Thos. Bt.
 Lewis, Robert
 Ley, J. H.
 Liefchild, W. G.
 * Liverpool, Earl of
 Livesey, Thomas
 Lloyd, Cynric
 Lloyd, L. F. Lloyd
 Lloyd, Llewellyn
 Lloyd, Rev. T.
 Lock, George
 †* Long, Walter, M.P.
 * Lovelace, Earl of
 Lyon, James
 Mabbott, W. C.
 Macnamara, A.
 * Maitland, W. Whitaker
 * Maitland, Fuller
 † Mainwaring, Townsend
 Maltby, Abraham
 Manby, Capt. G.
 † March, Earl of
 Marshall, Capt. Henry
 Marshall, W., M.P.
 Martin, Burgess
 Martin, Hy. Robert
 Mason, C. A.
 Massop, John
 Mauleverer, William
 Maxwell, W.
 May, Chas.
 * Melbourne, Viscount
 †* Miles, P. J.
 †* Miles, W., M.P.
 Millington, Bryan
 * Milne, I. L.
 Moody, C. A.
 †* Mordaunt, Sir John, Bart., M.P.
 †* Moreton, Lord
 * Moreton, Hon. Augustus H., M.P.
 * Morgan, Sir Chas. Bart.
 * Morton, John
 †* Morrison, J.
 * Mostyn, Hon. E. M. L.
 * Mostyn, Lord
 Mount Wm.
 Muskett Thomas
 Muskett, Jno.
 Neale, H. St. John
 †* Neeld, Joseph, M.P.
 Neve, Thos.
 Noakes, —
 * Noel, Hon. E. G.
 North, Frederick
 †* Northumberland, The Duke of
 Noyes, Thomas H.
 * Nurse, W. M.
 O'Brien, Stafford
 Ogle, Henry
 Oliver Wm.
- † Oliverson, Richard
 Oliver, James
 Osborne, C.
 Overman, C. E.
 Overman, T. W.
 Overman, W.
 Page, W. Woods
 Pagden, —
 * Palmer, R., M.P.
 Park, Rev. Waldegrave
 Parkes, J. W. H.
 Parker, Thos., M.P.
 Parry, G. F.
 Parsons, George
 Parsons, J. M.
 * Patten, Wilson, M.P.
 † Patterson, W. J.
 Peacock, John A.
 †* Peel, Sir R., Bt, M.P.
 * Pegus, Rev. W.
 † Pell, Sir W. O.
 Pell, Edward
 †* Pendarves, E. W., M.P.
 * Penruddock, John
 Peppercorn, Henry
 Percival, Thomas
 †* Percival, John
 Perry, G. W.
 Peters, J. W.
 † Philips, J. Burton
 * Phillips, Mark, M.P.
 Phipps, Thos. Hele
 Pillans, William
 Pinnock, Rev. J.
 Pinnock, Rev. H.
 Pittman, Rev. T.
 Platt, —
 Plestow, C. Berners
 * Plowden, William
 †* Portman, Lord
 * Price, Sir Robt., Bart., M.P.
 Punnet, Rev. J.
 Purrott, John
 †* Pusey, P., M.P.
 Putland, John
 * Pym, Francis
 †* Radner, Earl
 Randall, Rd.
 Ransome, James
 Ransome, Robt.
 Ransome, J. A.
 Rason, —
 Ravenhill, John
 Rawden, C. Wyndham
 * Rayleigh, Lord
 Reay, Jno., jun.
 Rham, Rev. W. L.
 Rhodes, J. A.
 Rice, C. R., M.P.
 Richards, James
 Richards, Rev. Thos.
 †* Richmond, The Duke of
 Ridgway, J.
 Rigg, R.
 * Ripon, Earl of
 Roberts, Robert
 Robins, B.
 Robertson, Daniel
 Robinson, Rev. W.
 Beauclerk
 Rogerson, John
 Rogerson, Joseph
 Rolfe, J.
 Rolls, John E. W.
 * Rosebury, Earl of
- Ross, Rev. A.
 Round, Chas. G.
 Rusbridger, John
 † Russell, Lord C., M.P.
 †* Rutland, The Duke of
 Ryde, W. H.
 Sadler, Henry
 Salomons, David
 Sampson, Benjn.
 †* Sandford, E. A., M.P.
 Satterfield, Joshua
 † Saunders, T. B.
 Sawbridge, Henry B.
 * Scarborough, Earl of
 Scudamore, Lt.-Col.
 Selmes Samuel
 Sewell, William
 * Seymour, Henry
 † Shaw, R. Fleetwood
 * Sheffield, Earl of
 Sherborn, George
 Sherborne, Francis
 * Sheridan, R. B.
 Sherratt, John
 * Shuckburgh, Sir F., Bt.
 Simonds, J. B.
 Skirving, W.
 Slack, J. Albin
 †* Slaney, R. A., M.P.
 Smith, Sir J. W., Bt.
 * Smith, Jeremiah
 † Smith, J. J.
 †* Smith, J. A., M.P.
 * Smith, W.
 Smyth, George
 Smythies, Rev. J. R.
 Snow, Benjamin
 Snow, Johnson
 Snowdon, Rev. C. C.
 Somes, Samuel
 †* Sondes, Lord
 Soukter, Geo.
 Sparkes, William
 † Spencer, Hon. Capt., M.P.
 †* Spencer, Earl
 Spooner, C.
 Stace, —
 * Stanhope, J. Spencer
 Stanley, Edward
 †* Stanley, Lord, M.P.
 * Stansfield, C. B. Wm.
 Starr, John
 St. Clair, Capt.
 * Steel, Sir Robert
 Stewart, Robert
 Stokes, Charles
 Stone, W.
 †* Stradbroke, Earl of
 Strafford, Henry
 Stroud, Henry
 * Stuckey, Vincent
 * Suffolk, Earl of
 * Sumner, Col. Holme
 Sumner, Rev. C. V.
 * Sutton, Sir R., Bart.
 †* Sutherland, The Duke of
 † Talbot, Earl of
 Tattersall, J.
 * Tawney, Henry
 Terard, Jos.
 Taunton, W. P.
 Taylor, Walter
 Thimbleby, William
 * Thomas, Inigo
- Thompson, H. S.
 †* Thompson, P. Beilby
 * Thompson, C. P., M.P.
 Thornton, Stephen
 Tilden, John
 Tillyer James
 Tindale, Benjamin
 * Tower, C. T.
 †* Townley, R. G., M.P.
 Toynbee, G.
 Trevor, Hon. General
 Trumper, John
 Trinder, Daniel
 * Trotter, John
 † Vane, Rev. J.
 * Vansittart, Henry
 * Vavasour, Sir E., Bart.
 Vines, R.
 † Verney, Sir H., Bart., M.P.
 Villebois, F.
 Walesby, Prime
 * Wall, C. B., M.P.
 Walsh, Sir John, Bart. M.P.
 Warburton, Hy., M.P.
 Warry, George
 Ward, H. G., M.P.
 * Watson, Hon. Richd.
 Weall, Thomas
 Webb, Wm.
 Webb, Jonas
 Webster, Lady
 † Weeding, Thos.
 * Welby, Sir W. Earle, Bt.
 Welland, Charles
 †* Wellington, The Duke of
 Welstead, Benjamin
 Welton, Cornelius
 Wentworth, Godfrey
 West John
 † Weyland, John, F.R.S.
 Whitear, Rev. W.
 †* Whitbread, W.
 Whitlaw, C.
 Whitting, I. H.
 † Wickens, J. Stephens
 * Wilbraham, G., M.P.
 Wilkinson, Rev. F.
 Wilkinson, George
 * Williams, W., M.P.
 † Willoughby, H.
 Wilmot, Sir E., Bart., M.P.
 * Willmott, W. W.
 * Willms, B.
 †* Wilson, Henry
 * Wiltshire, —
 Winder, J. W. Lyon
 Wingate, Thomas
 * Wingate, W. B.
 Wodehouse, E., M.P.
 † Wood, C., M.P.
 Wood, George James
 Wood, H.
 Wood, John
 Wood, James
 †* Worsley, Lord, M.P.
 † Wratislaw, Wm. F.
 * Wright, John
 Wyndham, Wm., jun.
 Yeatman, Rev. H. F.
 Yellowly, Dr.
 Young, Rev. B.
 * Youatt, Wm.

GREAT DINNER OF THE SMITHFIELD CLUB.

On Monday evening, the 17th Dec., the members and friends of the above Club assembled at the Freemason's Tavern, Great Queen Street, to celebrate their fortieth anniversary meeting; the attendance was much larger than usual, there being nearly 400 noblemen and gentlemen present, all deeply interested in the advancement of agriculture in all its branches. The Right Hon. Earl Spencer presided. Amongst those present we observed the Duke of Richmond, Lords Moreton and C. Russell, H. Handley, Esq., M.P., C. Cayley, Esq., M.P., Colonel Sibthorpe, M.P., J. W. Childers, Esq., M.P., C. Hillyard, Esq., the President of the Northamptonshire Grazing Society, and Messrs. T. Umbers, E. Franklin, J. Buckley, H. Chamberlain, S. Grantham, T. Beazeley, W. F. Wratlaw, W. Trinder, J. Ellman, T. R. Barker, &c.

The cloth having been removed, the NOBLE PRESIDENT said he rose to propose a toast that he was sure would be most enthusiastically responded to, as he was certain that none of them were wanting in gallantry or loyalty. (*Hear, hear.*) The toast he was about to propose, was the first lady in the land—"Her Most Gracious Majesty The Queen."

This toast was responded to in a manner that showed the noble president had not been mistaken in his estimate of the loyalty and gallantry of his agricultural friends.

The Noble PRESIDENT said, from the manner in which the last toast had been received, he was sure he need say nothing to recommend the one he was about to propose, he should therefore at once propose to them the health of Her Majesty the Queen Dowager, and the rest of the Royal Family. This was drank with enthusiasm.

The Noble PRESIDENT again rose and said, it now became alike his pleasure and his duty to propose to them a toast—one that he was convinced would meet with as warm a reception as the preceding ones had; he was convinced of this because it related to a subject that he was sure was uppermost in the breast of every man present, he need scarcely say he alluded to their Club. (*Cheers.*) It afforded him more than ordinary pleasure to be enabled to congratulate them on the prosperity of their Society, (*Cheers.*) a prosperity that had been progressive, and he was happy to say was still increasing. (*Cheers.*) If any proof of this were wanted, he would refer them for it to the larger quantity of stock that had been exhibited this year for the prizes—a quantity that was unprecedented in the annals of the society; but, if any further proof of the advancement of their club was needed, he (the noble president) would point to the highly respectable and numerous assembly over which he had now the honour to preside, (*Hear, hear.*) and he was confident that the talents, respectability, and numbers would at once evidence the increasing prosperity of the society. (*Hear, hear.*) He had said that they had had submitted to them for competition this year a larger quantity of stock than on any previous occasion, (*Hear, hear.*) but he could assure them that it was not in quantity alone that they had exceeded former years, (*Hear, hear.*) for he (Earl Spencer) was happy to bear his testimony to the great superiority of the stock shown this year in point of quality; (*Hear, hear, hear.*) this was gratifying to him, as he was sure it must be to all of them; (*Hear, hear.*) for in addition to the evidence it afforded of the success of the club, it showed them the improvement that had been effected by the operations of the club. (*Hear, hear.*) Yes, he would repeat that it proved to them that they laboured not in vain. (*Hear.*) But the greatest and strongest evidences he had to offer of their progressing prosperity was the increase of their members, and the consequent increase of their funds, (*Hear, hear.*) and he begged to congratulate them most cordially on the present flourishing state of their affairs, (*Cheers.*) a state which enabled him to promise that they would be enabled to do more the next year than they had done this. (*Hear, hear.*) He (the noble earl) was not fond of promising that

which would not be performed, for he would rather surprise them by an unexpected increase of prizes than damp their ardour by disappointment of those that were promised; (*Hear, hear.*) but it afforded him much pleasure to be enabled to promise them an increase in the amount given for prizes, (*Hear, hear.*) he was not going to promise a large sum, for he always liked to keep within compass, (*Hear.*) but he could with the greatest confidence state that 50*l.* would be added to the sum usually given. (*Loud cheers.*) The noble President then concluded an eloquent address amidst loud cheering, by proposing their standing toast, "Prosperity to the Smithfield Club."

After the cheering which followed this toast had subsided, the noble President said it became his pleasing duty to distribute the several prizes which had been awarded to the owners and breeders of the best stock. He then called on Mr. H. Chamberlain of Desford, near Leicester, and said that it afforded him much pleasure to present him with the first prize of twenty sovereigns, which had been adjudged to him for his very beautiful four years and eight months old Hereford ox, as well as the silver medal which had been awarded to him as the breeder of the same; he was sure he need not say that it did great credit to his skill and judgment, and begged to propose Mr. Chamberlain's good health.

Mr. CHAMBERLAIN in returning thanks said, that for the very flattering manner in which his health had been proposed by their noble president, and the very kind way it had been drunk, he begged to return them his sincere thanks; he should be indeed unworthy of the prize that had been awarded him did he not feel pride in having bred and fed the finest ox; he begged once more to thank them, and felt great pleasure in drinking all their healths.

The Noble PRESIDENT called upon Mr. T. Umbers of Wappenbury, near Warwick, and said that the second prize in Class 1, of ten sovereigns, had been awarded him for his four years and ten months old Hereford ox, and although he could not congratulate him upon having carried away the first prize, yet he could assure him that it is a great honour to come in second, and he was sure they would all feel much pleasure in drinking Mr. Umbers' health.

Mr. UMBERS said he thanked them for the compliment they had just paid him, and he could assure his lordship that he was not insensible of the prize his perseverance had obtained for him, and he begged to drink all their healths.

The Noble EARL then called upon Mr. J. Buckley of Normanton Hill, near Loughborough, and said that the first prize of thirty sovereigns in class two had been adjudged him for his five years and one month old Hereford ox, and the silver medal had also been adjudged to him as the breeder of the ox, he would propose Mr. Buckley's health.

Mr. BUCKLEY returned thanks, and in doing so drank all their healths.

The Noble PRESIDENT then said that the second prize in the same class had been adjudged to his noble friend the Marquis of Tavistock (whom he regretted was absent) for his lordship's four years and one month old Hereford ox, but although his lordship was not present, he was sure they would feel great pleasure in drinking his health.

Lord C. RUSSELL on behalf of his noble relative begged to return them his thanks for the very high honour they had conferred upon him, he was sure his lordship would have felt the greatest possible delight in being present at so respectable a meeting, and he would take leave to drink all their healths.

The PRESIDENT having called upon Mr. C. Hillyard of Thorplands, near Northampton, said it afforded him real pleasure to present him with the first prize of fifteen sovereigns, in class 3, for his three years and eight months old North Devon ox. It would be in the recollection of many present that at their last meeting Mr. Hillyard, under the promise that at the present show he would send, for their inspection, two oxen, the one of which he would particularly recommend them to imitate, but the other he would advise them to avoid. (*Cheers and hear.*) He would leave them to judge how far

Mr. H. had redeemed his pledge, for his part he thought he had shown that he was *equally great* and that he knew which to *chuse*; (*laughter*) he would therefore, with much pleasure, propose Mr. Hillyard's health.

MR. HILLYARD.—It has been my misfortune for several years past to have to address you as an unsuccessful candidate. Much to my satisfaction that is not my situation at this meeting! This day twelvemonths I told you I should send to this show two oxen, the one a mountain the other a mole-hill. That the one would be in form what he ought not to be, but that the other would be in form and quality everthing that could be wished. Every one present will, I think allow that my two predictions have been verified. I sent this mountain to the show-yard, because I was sure I should be able to make more of him there than any where else, but I had no more expectation of winning a prize with him, than I should have had of winning the Derby if mounted on one of my cart horses. About this time two years I saw, late in the day of a Northampton fair, two little Devon steers, standing there unsold. One of them happening to turn round and show me his head and fore-quarters, I immediately bought them, and at a little money, the seller could not tell me how they were bred, he having bought them of a dealer whose name he did not know. He promised to make inquiries for me but I never saw him again for more than twelve months, when all I could learn from him was, that they were bought, but not by him, at a sale of Devon cattle in Gloucestershire. After numerous enquiries I was enabled, only about three weeks ago, from the mark on the ear and brand mark, which was No. 13 on each horn, to get a certificate that he was bred by the late George Talbot, Esq., of Guiting Hall, near Moreton on the Marsh, and also of the day the animal was calved. Gentlemen, the satisfaction which a successful candidate derives from putting into his pocket the sovereigns to be produced from a bit of paper like the one I hold in my hand, is nothing to be compared to the pride all must feel on gaining the prize. I leave it to you, gentlemen, to fancy how proud I must feel on the present occasion, who have not only gained the first prize in the class my little ox was shown in, but also having gained the gold medal in this year's extraordinary fine show of cattle. Having at last become a successful candidate, I mean never again to be an unsuccessful one, and I tell you why—I never again mean to be a competitor without I should chance to see another little mole-hill of a steer formed according to my fancy; but as to my attempting without having an acre of really grazing land to exhibit large oxen to compete with those fed in the vale of Aylesbury and other known fine feeding pastures, it is kicking against the pricks with a vengeance to it; I have been unwise enough often to do so, but never will again. As long, however, as Providence permits me to live and to enjoy my present good state of health (which I hope I am truly thankful to acknowledge), I shall not cease to take a lively interest in the cultivation of the land and feeding cattle, and hope again to have the same pleasure which I now have, of drinking all your good healths.

The noble Earl having presented the remainder of the prizes to the successful candidates, according to the awards of the judges, given below,

The Duke of RICHMOND rose amidst loud cheering, and said he saw by their cheers that they anticipated the toast he was about to propose, and when he considered how much they were all indebted to their noble President, for the very great interest he ever took in the promotion of every thing connected with agriculture, he was sure they could not be too grateful for the great services he had rendered them. (*Cheers.*) He was always found foremost in the ranks of those who endeavoured to effect any improvement in any of the branches of agriculture. (*Cheers.*) He would not dwell longer on his virtues, they all knew them, (*cheers,*) but would at once propose the health of their noble President, the Right Hon. Earl Spencer.

The noble EARL rose, and when the cheers, which followed the toast, had subsided, spoke as follows:—He should be indeed ungrateful and unworthy their confidence, were he not to feel, and that deeply, the

handsome compliment that had just been paid him, but he could assure them that their approbation of his little services which the noble Duke (who had done him the honour to propose his health) had in kindness magnified into things of importance, was more than sufficient recompense for any slight inconvenience he had been put to. He could assure them that he not only felt it a pleasure to be in constant intercourse with the yeomen of England, but he also felt it to be his duty to forward, by all means in his power, the improvement of agriculture, and the consequent benefit of mankind in general; (*cheers*;) and he could assure them that he would always be ready to contribute to the best of his humble abilities, to the furtherance of the objects of this valuable society. (*Cheers.*) The present meeting, as he had before remarked, was the best he had ever witnessed, both for quantity and quality, and there was one thing more, which he could not pass over in silence, and that was the large number of prizes that had been carried away by the Herefords in opposition to the short-horned which, as they knew, had on former occasions always received at least a fair share, if not a majority of the prizes; they all knew that the short-horn breed was his favourite stock, and he must say he was rather surprised to see so few obtain prizes. He begged again to express the gratitude he felt for the handsome manner in which his health had been responded to, and to assure them once more, that his time and services were always at their command. He would now propose to them the health of a nobleman who had rendered the cause the most efficient aid; a nobleman who, in the time of peace had turned his sword into a ploughshare, who has endeavoured to promote the happiness of mankind, by creating by all means in his power that friendly intercourse between landlord and tenant, that should at all times exist, and which is beneficial to both;—(*cheers.*)—a nobleman who has paid great attention to the improvement of stock, and who I am happy to say, has had prizes awarded to him, this very year. (*Cheers.*) I see I am anticipated, I will, therefore, without further delay, give you "His Grace the Duke of Richmond."

HIS GRACE rose amidst loud cheering, and said he could assure them, he deeply felt and valued the kind and handsome terms in which his health had been proposed and responded to. He felt he owed this and similar acknowledgements not to any merit of his own, but because he had felt it to be his duty as a landowner, to associate with the farmers of the country. (*Great cheering.*) He believed that if the intercourse was more general between Landlords and tenants, society would be in a better state. (*Cheers.*) One of the necessary advantages derived by the formation of the Smithfield Cattle Club, and other associations of the kind which had since been established, was the opportunity which they gave for the landlords co-operating with the tenants, and others interested in the better breed of stock, and to revive the industrious and honest efforts of the people. These meetings also afforded the means of tightening the links in society, which at this period could not be loosened without imminent danger to the whole community. (*Cheers.*) He need scarcely say that the prize which had been awarded to him, afforded him much satisfaction, but he should not follow the example of Mr. Hillyard, for, should he be unfortunately beaten, he should again and again use his utmost exertions for the advancement of the agricultural interest. (*Cheers.*) He could assure them that if they thought he could in any manner serve them in promoting the advancement of the society, they might at all times command his services. He concluded by drinking all their healths.

The noble PRESIDENT then gave the health of the Vice Presidents.

The Duke of RICHMOND returned thanks. He observed that they had added another sum to the debt of gratitude he owed them. He did not know from what cause the other Vice President was absent, but he would assure them he would never absent from their meetings except from illness or domestic calamity. Ever since he had not been employed in the army of his country, he had felt the greatest pleasure in meeting the farmers of England; he did not mean of one county but of every county, for he considered them the representatives of

England, (*cheers*,) and as such he always felt the greatest pleasure in their company. (*Cheers*.)

The PRESIDENT said he had now to propose to them the health of gentlemen who had had a very important duty to perform; as to the ability with which they had performed it, he believed no one could entertain a doubt on the subject. He begged to propose the Judges, and thanks to them for the able and impartial manner in which they performed their arduous duties.

Mr. THOS. BEASLEY said he begged on behalf of himself and his co-judges, to return them his sincere thanks for the handsome manner in which they had drunk their healths. It was a very great satisfaction to himself and those with whom he was associated, to find that they had given satisfaction. They had pursued the usual course, and had decided to the best of their judgment; if they had erred, it was an error of judgment, and they claimed pardon for it. He begged once more to thank them, and to propose to them the health of a gentleman who had always taken a lively interest in the welfare of their club; he begged, with the leave of the President, to propose "the health of H. Handley, Esq., M.P."

Mr. HANDLEY, in returning thanks, for the compliment that had just been paid him, begged to remind them of the great benefits that had been derived by the community from the exertions of Professor Coleman, who he was happy to see present; they would recollect that at their last meeting, he had alluded to the great benefits that might be expected from the formation of the English Agricultural Society; and he sincerely hoped, that the Veterinary College, would seriously turn their attention to the diseases of other animals, with the same effect that they had to the diseases of the horse—at present, the diseases of beasts, sheep, and pigs, were almost unknown, and, as a natural consequence the remedies were unknown, but he did trust that the same facility in medicine, and practice, would be afforded to these unfortunate animals as had already been afforded to the horse—he did hope that the day was not far distant, when they would find the Infant Agricultural Society an assistance to their club.

The Noble President then proposed the health of the Stewards.

Mr. UMBERS, the retiring Steward, returned thanks. He said, that he was about to retire from office, but he was happy to say, that he left it in a more flourishing state than it was in when he took office; he was glad that the manner in which they had performed their duties, had given them satisfaction, he begged once more to thank them for the manner in which they had drunk their healths.

The noble earl then proposed the health of Honorary Secretary, Mr. Humphrey Gibbs, a gentleman to whose talents and perseverance the Society, in a great measure, owed its present prosperity.

Mr. GIBBS, returned thanks, and begged to say, that so long as they thought his services of any value, they might command them.

The noble president said, he had a toast to propose to them that he was sure would meet with their approbation, it was "Success to the English Agricultural Society." He said they had since their last meeting with the assistance of a numerous and wealthy body, succeeded in establishing the Society. The object of the Society was to increase the produce of the land, so as to place it within the reach of every man; this would be effected by its being produced at such a price as could be well afforded by every industrious person. Science and chymistry had been applied to our manufactures and to commerce, and why not to agriculture? He had now the satisfaction to state that the Society was in such a state of progression, as to promise the most beneficial results to the community.

Mr. CHILDERS, M.P., said, as one of the committee, he begged to tender them his thanks for the very warm manner in which they had responded to the toast; the Society as they were aware was a very young one, not yet having become a *yearling*, and consequently, it has not been able to effect much, but he could assure them that young as it was, it had both the disposition, and

the power to effect a great deal of good to this Society, (he meant the Smithfield Club) as well as to every society, and to every individual connected with agriculture. They numbered among their members some of the first men in the kingdom, and their funds were in the most flourishing state. With these advantages, and disposition to effect improvement, what was there that they might not do? The speaker then went on to enumerate what the committee had done, which will be found in the report of the committee, read at the meeting of the Society on Tuesday, and concluded by hoping that no jealousy would exist, but that all the societies having for their objects the advancement of agriculture, would only vie with each other in endeavouring to effect the greatest quantity of good. After some other toasts, the company separated.

AWARD OF THE JUDGES.

The Judges for the present show were Messrs. Valentine Barford, Jun., of Foscote, near Towcester; Thomas Beaseley, of Thursington, Leicester; and William Trinder, of Wantage, Berks. They assembled on Thursday, and after considering the printed instructions delivered to them by the Honorary Secretary, proceeded to consider and determine the comparative merits of the animals in each class, and of those in extra stock, and finally determined to make the following awards:—

CLASS I.

That the first premium of twenty sovereigns in Class I., for oxen or steers of any breed under five years of age, without restrictions as to feeding, be adjudged to Mr. H. Chamberlain, of Desford, near Leicester, for his four years and eight months old Hereford ox, bred by himself, and fed on grass, hay, turnips, cabbage, cake, and bean meal; travelled to the show by caravan eight miles, and by canal boat 160 miles.

That a silver medal, as the breeder of the above ox, be awarded to Mr. H. Chamberlain.

That the second premium of ten sovereigns in Class I., as above, be adjudged to Mr. T. Umbers, of Wapenbury, near Warwick, for his four years and ten months old Hereford ox, bred by Mr. F. Heycock, of Byford Court Farm, Hereford, and fed on grass, hay, turnips, potatoes, oil cake, and barley flour; travelled to the show by caravan nine miles, and by railway eighty-three miles.

CLASS II.

That the first premium of thirty sovereigns in Class II., for oxen or steers of any breed under six years of age, weight ninety stone (of 14 lbs.) and upwards, that shall not have had cake, corn, meal, seeds, grains, or distillers' wash, during twelve months previous to the 1st August, 1838, be adjudged to Mr. J. Buckley, of Normantonhill, near Loughborough, for his five years and one month old Hereford ox, bred by himself, and fed on vegetable food, oil cake, and bean meal; travelled to the show-yard on foot one mile, and by water 114 miles.

That a silver medal, as the breeder of the above ox, be adjudged to Mr. Buckley.

That the second premium of fifteen sovereigns in Class II., as above, be adjudged to the Most Hon. the Marquess of Tavistock, for his Lordship's four years and one month old Hereford ox, bred by the Right Hon. the Earl of Oxford, at Egwood, near Kington, Hereford, and fed on grass, hay, turnips, carrots, oil-cake, and barley-meal; travelled to the show by van fifty-six miles.

CLASS III.

That the first premium of fifteen sovereigns in Class III., for oxen or steers of any breed under five years of age, under ninety stone and above seventy stone weight, that shall not have had cake, corn, meal, seeds, grains, or distillers' wash, during twelve months previous to the 1st of August, 1838, be adjudged to Mr. C. Hillyard, of Thorplands, near Northampton, for his three years and eight months old North Devon ox, bred by the late Mr. Talbot, of Guiting, Gloucestershire, and fed on turnips, mangel-wurzel, hay, oil-cake, and bean-meal; travelled to the show by boat ninety miles.

That a silver medal be presented to the representatives of the late Mr. Talbot, as the breeder of the above ox.

That the second premium of ten sovereigns in Class III., as above, be adjudged to Mr. G. Smith, of Cashio Bridge, near Watford, for his three years and nine months old Hereford ox, bred by Mr. W. Britten, of Woodhouse, Sholdham, near Leominster, and fed on oil-cake, Swedish turnips, and hay.

CLASS IV.

That the premium of ten sovereigns in Class IV., for oxen or steers of any breed under four-and-a-half years of age, and under eighty stone weight, without restrictions as to feeding, be adjudged to the Right Hon. the Earl Spencer, of Althorpe, near Northampton, for his Lordship's three years and four months old Durham steer, bred by his Lordship, and fed on turnips, mangel-wurzel, hay, and oil-cake; travelled to show on foot five miles, and by boat ninety-seven miles.

That a silver medal, as the breeder of the above ox, be awarded to the Right Hon. the Earl Spencer.

CLASS V.

The first premium of ten sovereigns and the second premium of five sovereigns in this class, for oxen or steers of any breed, not exceeding four years and three months of age, under seventy stone weight, that shall not have had cake, corn, meal, seeds, grains, or distillers' wash during twelve months previous to the 1st of August, 1838, was not awarded, as the judges did not consider the animals to possess sufficient merit.

CLASS VI.

That the first premium of fifteen sovereigns in Class VI., for fattened cows or heifers under five years of age, free-martins, and spayed heifers, not qualified, be adjudged to Mr. W. Cowper, of Thorpe-Mandeville, near Banbury, for his four years and ten months old Durham cow, bred by himself, and fed on cake, barley-flour, Swedish turnips, and hay; travelled to the show by van sixty-nine miles.

That a silver medal, as the breeder of the above cow, be awarded to Mr. Cowper.

That the second premium of five sovereigns in Class VI., as above, be adjudged to Mr. W. F. Wratishaw, of Rugby, Warwickshire, for his three years and eight months old cross Durham heifer, bred by Mr. W. Godfrey, of Thorn, Yorkshire, and fed on grass, hay, turnips, cabbage, oil cake, and barley flour; travelled on foot four miles, and by railway eighty-three miles.

CLASS VII.

That the first premium of fifteen sovereigns in Class VII., for fattened cows of five years old and upwards, free-martins and spayed heifers, not qualified, be adjudged to Mr. I. F. Potterton, of Stowe, near Weedon, for his six years and six months old Durham cow, bred by Captain Eshton, of Chesterton House, near Henham, Northumberland, and fed on potatoes, carrots, bean-meal, and oil-cake; travelled to the show by boat seventy miles.

That a silver medal, as the breeder of the above cow, be awarded to Captain Eshton, of Chesterwood House.

That the second premium of five sovereigns in Class VII., as above, be adjudged to Mr. I. Ivens, of Eydon, near Banbury, for his ten years old Hereford cow, bred by himself, and fed on turnips, barley-meal, and cake; travelled to the show by van eighty miles.

That the gold medal to the breeder of the best beast in any of the above classes be awarded to the representatives of the late Mr. Talbot, for Mr. Hillyard's four years and eight months old North Devon ox, which obtained the first premium in Class III.

CLASS VIII.

That the first premium of ten sovereigns in Class VIII., for long-woolled fat weather sheep, one year old, that have never had cake, corn, meal, seeds, or pulse, be adjudged to M. I. Painter, of Burley, Rutlandshire, for his three twenty months old Leicester wethers, bred and fed by himself, on grass and vegetable food only.

That a silver medal, as the breeder of the above sheep, be awarded to Mr. I. Painter.

That the second premium of five sovereigns in Class VIII., as above, be adjudged to the Right Hon. Charles Arbuthnot, for his three twenty-one months old Leicester wethers, bred and fed by himself.

CLASS IX.

That the first premium of ten sovereigns in Class IX, for long-woolled fat wether sheep, one year old, without restrictions as to feeding, be adjudged to Mr. H. Chamberlain, of Desford, near Leicester, for his three twenty months new Leicester wethers, bred and fed by himself on grass, turnips, cabbages, cake, and peas.

That the silver medal, as the breeder of the above sheep, be awarded to Mr. H. Chamberlain.

That the second premium of five sovereigns in Class IX, as above, be adjudged to the most hon. the Marquess of Tavistock, for his lordship's three twenty months Leicester wethers, bred and fed by his lordship.

That the gold medal to the breeder of the best pen of long-woolled sheep in Class VIII and IX be adjudged to Mr. H. Chamberlain, for his three twenty months new Leicester wethers, which obtained the first premium in Class IX.

CLASS X.

That the first premium of fifteen sovereigns in Class X, for short-woolled fat wethers, one year old, without restrictions as to feeding, be adjudged to Mr. S. Grantham, of Stoneham, near Lewes, for his three twenty months South Down wethers, bred and fed by himself.

That a silver medal, as the breeder of the above sheep, be awarded to Mr. S. Grantham.

That the second premium of five sovereigns in Class X, as above, be adjudged to his Grace the Duke of Richmond, for his Grace's three twenty months old South Down wethers, bred and fed by his Grace.

CLASS XI.

That the first premium of ten sovereigns in Class XI, for short-woolled fat wether sheep, two years old, without restrictions as to feeding, be adjudged to Mr. S. Grantham, of Stoneham, near Lewes, for his three thirty two months old South Down wethers, bred and fed by himself.

That a silver medal, as the breeder of the above sheep, be awarded to Mr. S. Grantham, as above.

That the second premium of five sovereigns for Class XI, as above, be adjudged to his Grace the Duke of Richmond, for his three thirty-two months old South Down wethers, bred and fed by his Grace.

That the gold medal to the breeder of the best pen of short-woolled sheep exhibited in the Classes X and XI, be adjudged to Mr. S. Grantham, for his three twenty months old wethers, which obtained the first premium in Class X.

CLASS XII.

That the first premium of ten sovereigns in Class XII, for pigs of any breed above four months and under nine months old, be adjudged to Mr. G. W. Kirkby, for his three thirty-five weeks old Bedfordshire pigs, bred by Mr. J. Kempson, of Shillington, Bedfordshire, fed on skim-milk and peas.

That a silver medal, as the breeder of the above pigs, be awarded to Mr. J. Kempson.

That the second premium of five sovereigns in Class XII, as above, be adjudged to Mr. W. Temple, of Heston, Middlesex, for his three thirty-three weeks old Buckinghamshire pigs, bred and fed by himself.

EXTRA STOCK.

That the silver medal, as the exhibitor of the best beast in extra stock, be presented to Mr. E. Bouverie, of Delapreabbey, near Northampton, for his four years and under two months old Hereford ox, bred by Mr. T. Arden, of the Leys, Hereford, and fed on hay, grass, Swede turnips, cabbages, oil-cake, and barley flour.

That a silver medal, as the exhibitor of the best long-woolled sheep in extra stock, be presented to the most hon. the Marquess of Exeter, for his Lordship's four years and eight months old Leicester ewe, bred and fed by his Lordship, at Burghley-park, Stamford.

That a silver medal, as the exhibitor of the best short-

woolled sheep in extra stock, be presented to his Grace the Duke of Richmond, for his thirty-four months old South Down ewe, bred and fed by his Grace.

That a silver medal, as the exhibitor of the best pig in extra stock, be presented to Mr. G. Chandler, of Kingston, Surrey, for his thirty weeks and five days old Surrey pig, bred by himself, and fed on meal, water, and peas.

COMMENDATIONS.

The Judges highly commend Mr. W. F. Wratislaw's four years and five months old Hereford ox, exhibited in Class I.

They also highly commend Mr. J. T. Senior's four years and nine months old Hereford ox, exhibited in Class I.

They commend the Most Hon. the Marquess of Tavistock's four years and four months old Hereford ox, exhibited in Class I.

They commend Mr. R. Rowland's four years and ten months old Hereford ox, exhibited in Class I.

They commend Mr. W. Mack's four years and ten months old Durham ox, exhibited in Class I.

They commend a very fine Sussex ox, belonging to His Grace the Duke of Norfolk, and which was excluded from Class I. in consequence of over age.

They also commend a very fine Hereford ox belonging to Mr. Walker, which was excluded from Class I. in consequence of over age.

The Judges highly commend Mr. H. Chamberlain's four years and eight months old Hereford ox, exhibited in Class II.

They also highly commend Mr. C. Stoke's four years and seven months old Durham ox, exhibited in Class II.

They commend the Earl Spencer's five years and one month old Durham ox, exhibited in Class II.

They commend Mr. W. F. Wratislaw's four years and ten months old Hereford ox, exhibited in Class II.

They also commend Mr. E. Bouverie's Hereford ox, four years and sixteen days old, exhibited in Class II.

They commend Mr. R. W. Baker's five years and one month old short-horned ox, exhibited in Class II.

They commend Mr. R. Rowland's four years and eight months old Hereford ox, exhibited in Class II.

They commend Earl Spencer's three years and eight months old Durham ox, exhibited in Class III.

They commend Mr. W. J. Baily's four years and six months old Hereford ox, exhibited in Class III.

They commend Mr. R. Rowland's four years and seven months old Hereford ox, which was excluded Class III. in consequence of over-weight.

They commend Mr. R. Rowland's four years and four months old Hereford ox, which was excluded Class IV. in consequence of over-weight.

They commend Mr. T. F. Johnson's three years and four months old short-horned heifer, exhibited in Class VI.

They commend Mr. J. F. Potterton's three years and six months old Durham heifer, exhibited in Class VI.

They commend Mr. J. Richardson's four years and five months old Durham heifer, exhibited in Class VI.

The Judges commend, generally, Class VII.

They commend the Marquess of Exeter's three years and twenty months old Leicester wethers, exhibited in Class IX.

They commend, generally, Class XII.

They highly commend the Duke of Bedford's four years and five months old Scotch ox, exhibited in extra stock.

They highly commend Mr. T. Umber's four years and eleven months Hereford ox, exhibited in extra stock.

They highly commend Mr. W. F. Wratislaw's four years and seven months Devon heifer, exhibited in extra stock.

They commend Mr. M. Sharmen's three years and eight months long-woolled ewe, exhibited in extra stock.

They commend Mr. Painter's twenty months old long-woolled wether, exhibited in extra stock.

They commend Mr. H. Chamberlain's twenty months old new Leicester wethers, exhibited in extra stock.

They Judges commend generally the pigs exhibited in extra stock.

The Judges beg to notice two pens of sheep of Lord Western, and the club feel obliged by his lordship giving the public an opportunity of inspecting them.

SMITHFIELD CLUB—PRIZE CATTLE.

We subjoin the weights of the prize animals, with the names of the purchasers, so far as we have been enabled to obtain them, and shall endeavour to give the remainder in our next.

CLASS I.

1st Prize—Mr. Chamberlain's ox, purchased by Mr. Gibblet, 206st. 3lb.

CLASS II.

1st Prize—Mr. Buckley's ox, purchased by Mr. Cowell, 190st.—rough fat, 25st.

2d Prize—Marquis of Tavistock's ox, purchased by Mr. Slater, 222st. 6lb.—rough fat, 25st. 4lb.

CLASS III.

1st Prize—Mr. Hillyard's ox, purchased by Mr. Dobbins, 139st. 6lb.—rough fat, 20st.

2nd Prize—Mr. G. Smith's ox, purchased by Mr. Gibblet, 151st. 2lb.

CLASS VII.

1st Prize—Mr. Potterton's ox, purchased by Moray, White & Co., 180st.—rough fat, 33st.

CLASS IX.

		Rough fat.
2nd Prize—Marquis of Tavistock's sheep, purchased by Mr. Green	18st. 6lb.	2st.
	19st. 4lb.	2st.
	20st. 4lb.	2st.

CLASS X.

1st Prize—Mr. Grantham's sheep, purchased by Mr. Gibblet	17st. 11lb.	
	16st. 7lb.	
	18st. 0lb.	
2nd Prize—Duke of Richmond's sheep, purchased by Mr. Hancock	17st. 11lb.	
	17st. 7lb.	
	16st. 2lb.	

CLASS XI.

2nd Prize—Duke of Richmond's sheep, purchased by Mr. Hancock	16st. 0lb.	
	16st. 3lb.	
	14st. 4lb.	

CLASS XII.

1st Prize—Mr. Kirkly's Pig, purchased by Mr. Morton, 38st. 4lb.

EXTRA STOCK.

Marquis of Exeter's Sheep, purchased by Mr. Slater ..	17st. 6lb.
	17st. 2lb.
	18st. 0lb.
	20st. 2lb.
	16st. 6lb.

Duke of Richmond's Wether, purchased by Mr. Hancock, 15st. 7lb.

		Rough fat.
	17st. 11lb.	2st. 0lb.
Lord Western's Sheep, purchased by Mr. Allen	17st. 2lb.	1st. 6½lb.
	16st. 5lb.	2st. 5lb.
	16st. 7lb.	2st. 3lb.
	15st. 2lb.	2st. 3lb.
	16st. 4lb.	3st. 2½lb.

BATH AND WEST OF ENGLAND SOCIETY FOR THE ENCOURAGEMENT OF AGRICULTURE, &c.

The adjourned November meeting of this Society was held at Hetling House, on Monday, Dec. 10., when the usual routine business was transacted.

The annual meeting took place on Tuesday.

On the motion of Capt. SCOBELL, Sir T. B. Lethbridge, Bart., V.P., was called on to preside.

The CHAIRMAN on taking the chair, observed, that he

could not do so without lamenting the loss they experienced in not having their noble President amongst them, but they all knew that the duties which the noble Marquis had to attend to, must confine him in London, and prevent his meeting them, which he, (Sir Thomas) was sure he would be glad to do, if it were in his power. There was never a time in which a review of the state of agriculture was more necessary than at the present, to see if there were any means they could adopt which might be advantageous to it. He was of opinion that the time was now come when the protection duty might be withdrawn, for from the reduction of taxation, rent, &c., he believed they were in a situation to compete with the foreign corn grower. Now they had a large population to feed with but a small quantity of what was termed the staple commodity of life to do it, owing to the effect produced by the corn laws, of reducing the demand for corn on the foreign market, and consequently, they could not now furnish the necessary supply. Besides, instead of having wheat as the only means by which the rent could be made up, they had arrived at that point when, by the system of green crops and live stock, it was a matter of indifference to the agriculturist whether wheat was made the principal object of his attention or not. Being himself a landowner to some extent, and in continual intercourse with his tenantry, he could state it as a fact that it was not necessary for them to make corn a particular object of their attention, since it may be had from the foreign grower, and the more that was had from him, the more advantageous it would be to the British grower.

The Rev. J. R. SMYTHIES said it was with pain he had just heard that speech from the Chairman. He had not the least objection to those remarks going forth to the world as the opinion of Sir Thomas Lethbridge, but he had an objection to their going forth to the world as the opinions of that society, which character they would seem to carry, being delivered from the chair of the Society, if they were suffered to pass unnoticed, when it must be known that they were not the opinions of the Society, though they were of Sir Thomas Lethbridge, and they differed much from those held by that gentleman in the former part of his life. There was one expression he made use of, which he (Mr. Smythies) could not help noticing; it was about the agriculturists being put in the same position as other inhabitants of the country; that was all he (Mr. S. wanted;) but he would ask what manufacturers were there that had not a protecting duty for their commodities, and why should the agriculturists be the only class without a protecting duty—they who had all the expences of the country to pay, the poor to maintain, and the roads to keep—at least in a greater proportion than any other class? As a renting farmer of pretty considerable extent, and of some experience, he knew that if there were a free importation of corn, the English grower could not afford to raise another sack, and then what would be the state of the country if the supply from abroad should fall short—if the ruling powers of the North should not allow any of their corn to be brought to this country? Their condition would be deplorable, and there would be no means of obtaining a supply for the immediate wants of the people until the English agriculturist again directed his attention to the growth of corn.

Mr M'ADAM exhibited before the Society a set of Scotch harness, the peculiar merits of which he explained. The price of the harness was only 3*l.* 11*s.* The saddle tree was constructed with peculiar care, and sat as easy on the horse's back as a riding saddle, so that the horse scarcely felt the lateral motion of the shafts of the cart. The bridle was distinguished by the absence of a bearing rein, which he was convinced did no good, but rather harm, and he was glad to find that reason was generally prevailing over custom and prejudice, and driving it out. He was coming up a hill from Exeter some time since on a coach, when the horses stood still, refusing to take the load up the hill; by the permission of the coachman, he (Mr. M'Adam) took the bearing reins off the horses, and they immediately proceeded up the hill with the load.

Mr. G. W. HALL exhibited to the meeting a common

clasp knife which had been picked up by a fine cow while eating her food, and in three days caused her death; he had taken it from the entrance to the second stomach; the effect of its being there was to stop rumination and the animal died in acute pain.

Dr. WILKINSON exhibited a model of Dr. Perkin's apparatus for warming houses, conservatories, &c.

PREMIUMS AND BOUNTIES.

We, the undersigned, having been appointed Judges of live stock exhibited for the premiums offered by the Bath and West of England Society, Dec. 11th, 1838, do unanimously award the premiums and recommend bounties as follows:—

To Mr. Geo. Ferris, Shrivenham, for the best bull, cow and offspring, short horned breed, Sir B. Hobhouse's premium.....	£ s.	15 0
To Mr. Geo. Ferris, Shrivenham, for the best fat ox, Hereford and short-horn breed, breeder and feeder, a splendid animal, the premium of		20 0
To Mr. Geo. Ferris, Shrivenham, for the best fat steer, Hereford and short-horn breed, breeder and feeder, a premium of		15 0
To Mr. Fussell, Lacock, for the best fat cow, short-horn breed, breeder and feeder, a premium of		10 0
To W. F. Knatchbull, Esq., Babington, for a fat cow, a bounty of ..		5 0
To Mr. Geo. Ferris, Shrivenham, for the best fat heifer, Hereford and short-horn breed, breeder and feeder, a premium of		8 0
To Mr. Jas. Kearsey, Tarleton, Gloucestershire, for the four best fat wethers, Cotswold and Leicester, a premium of		6 0
To Mr. Francis Frankcom, Little Badminton, for the four best fat ewes, improved Leicester, a premium of		4 0
To Rev. J. R. Smythies, Lynch Court, Hereford, for the three best breeding heifers, Hereford breed, a premium of		10 0
To Mr. James Maton, Collingbourne, Wilts, for the best six breeding ewes, Southdown, a premium of		10 0
To Mr. F. Francom, Little Badminton, for the best six breeding ewes, Leicester, a premium of		10 0
To Mr. Geo. Ferris, Shrivenham, for the best boar, Norfolk breed, a premium of		2 0
To Mr. John Laurence, Berkeley, Gloucestershire, for the best stallion, three years old, a bounty of		5 0

EXTRA STOCK.

To Messrs. Thos. and Edwin Ferris, Bath, for two steers and heifers, short-horn breed, possessing extraordinary merit, we recommend a bounty of	£ s.	5 0
To W. F. Knatchbull, Esq., Babington, for an excellent fat cow, Hereford breed, we recommend a bounty of		2 0
To Mr. Thos. Hales, Bath, for a very superior Scotch ox, we recommend a bounty of		5 0
To Mr. Geo. Ferris, Shrivenham, for a breeding sow, Norfolk breed, we recommend a bounty of		1 0
To Mr. W. Tanner, Kington Langley, for a fat pig, Berkshire, we recommend a bounty of ..		1 0
To Mr. Robt. Joliffe, Long Ashton, for three year old steer and heifer, we recommend a bounty of		2 0

JOHN PARSONS, GEO. SENIOR, SAM'L. FERRIS.

To John Frankcom, for the best six fleeces of coarse combing wool, a premium of	£ s.	5 0
To James Cockrell, for 22 years faithful servitude with Benjamin Gray, Esq.....		5 0
To Robert Gosling, for 13 years' faithful servitude with Mr. Geo. Ferris		3 0
To Charles Townsend, for 10 years' faithful servitude with D. S. Hayward, Esq.....		3 0
To Susan Vicary, for 45 years' faithful servitude with Sir T. B. Lethbridge, Bart.....		4 0

HOPS.

NUMBER OF ACRES IN CULTIVATION IN ENGLAND, AS PER RETURNS BY ORDER OF THE HOUSE OF COMMONS.

1807	38,218	1823	41,458
1808	38,436	1824	43,419
1809	38,357	1825	46,718
1810	38,265	1826	50,471
1811	38,401	1827	49,485
1812	38,700	1828	48,365
1813	39,521	1829	46,135
1814	40,575	1830	46,726
1815	42,150	1831	47,129
1816	44,219	1832	47,101
1817	46,293	1833	49,187
1818	48,593	1834	51,273
1819	51,014	1835	53,816½
1820	50,048	1836	55,422
1821	45,662	1837	56,323
1822	43,766	1838	no return.

WM. BANFIELD.

THE QUANTITY OF MALT CONSUMED BY THE UNDERMENTIONED BREWERS OF LONDON AND ITS VICINITY,

From OCTOBER 10, 1837, to OCTOBER 10, 1838.

	Qrs.		Qrs.
BARCLAY and Co.	107455	Honeyball	1714
Hanbury and Co.	90140	Clarke, Charles	1624
Whitbread and Co.	45460	Satchell	1431
Reid and Co.	44928	Jones, T.	1338
Combe and Co.	43444	Fillmer	1291
Meux and Co.	35065	Ufford	1291
Calvert and Co.	31529	Collyer, Wood, and Co.	1260
Hoare and Co.	31278	Verrey	1212
Taylor and Co.	27320	Hume, G.	1160
Elliot and Co.	22486	Hagan	1140
Charrington & Co.	20290	Nicholls and Co.	1055
Thorne and Son	18545	Buckley and Co.	1010
Gardner and Co.	16921	Blogg	1006
Goding and Co.	14028	Clarke, Robert	983
Ramsbottom & Co.	13012	M'Cleod	978
Courage and Co.	10723	Jenner	925
Mann	10326	Turner, R.	897
Bricheno	8857	Holt	846
Wood and Co.	8506	Turner, John	821
Goding, Thomas	7551	Addison	812
More	7129	Collins, J.	780
Crowley	6610	Clarke, S.	768
Hazard and Co.	6552	Manvell	756
Manners and Co.	6121	Mann, Joel	752
Harris, Thomas	5888	West	749
Lamont, Stewart, and Co.	5251	Lock	725
Hale	5039	Church	672
M'Leod, Bentley	4700	Mantell and Co.	650
Halford & Topham	4685	Fenton	587
Farren	4599	Hodd	531
Richmond and Co.	4058	Ing	514
Staines and Fox	3749	Martin and Co.	501
Tubb	3365	Pink, A.	485
Page	3168	Griffiths	483
Laxton	3167	Clark and Co.	469
Maynard	2643	Harris, Robert	456
Plimmer	2500	Garrett, W.	450
Lambert	2435	Abbot, E.	441
Johnson and Wyatt	2428	Collins, W.	407
Gaskell and Co.	2288	Bowden	393
Cox, John	1991	Wicks	385
Williamson and Co.	1919	Mattam	380
Hill and Rice	1911	Wells	378
Griffiths	1884	Woodward	377
Masterman	1847	Cooper	370
Sherborne and Co.	1842	Chadwick	361
Hodgson & Drane	1790	Chapman, A.	348
Very, W. and G.	1735	Thompson	344

PARTICULAR DISTRICTS FROM 1818 TO 1838.

	1818.	1819.	1820.	1821.	1822.	1823.	1824.	1825.	1826.	1827.	1828.
KENT	114719 18 8½	125247 3 6	59619 3 2½	85436 8 10½	114116 10 4½	14677 7 6½	87149 15 1½	7631 3 6½	151539 9 8½	72763 19 1	95003 10 11
SUSSEX	49578 5 0½	78524 2 0½	42600 4 2½	39716 17 10½	48864 1 7½	10562 7 7½	39193 2 1	2040 3 0½	64116 14 0½	41077 15 10	43364 17 3½
WORCESTER	22215 12 4	26036 13 2½	27027 19 3½	22404 10 6½	23225 3 5½	4 4 1½	12104 15 2	11911 10 8½	30649 16 1	19856 12 5½	22119 6 4
FARNHAM	4252 16 4½	5477 12 0	5111 16 9½	3322 16 9½	10211 18 3½	667 16 2½	7123 9 7	1289 16 6	14650 7 0½	5512 4 5½	7074 8 7½
ESSEX	4102 18 4	3233 5 9½	1859 17 3½	1554 17 3½	3108 11 4½	71 18 10½	1498 14 9	78 12 11½	3868 12 11½	2217 9 3½	1749 1 4½
NORTH CLAYS	3421 7 4½	2542 15 11½	1255 3 2½	1327 14 5	3162 17 10½	7 14 2½	1331 19 5½	1341 4 3½	3570 16 8½	191 11 7½	2428 16 6½
Sundry Small Districts in various parts of Britain	474 15 3½	1014 9 7½	826 5 4½	616 4 8	1035 11 9½	66 10 2½	430 3 11	24 9 10½	635 4 2½	228 13 6½	297 9 9½
	£199465 13 6	242076 2 2	133330 9 6½	151609 10 8½	203724 14 9½	26057 11 9½	148832 0 0½	21317 0 11½	269331 0 9½	140848 6 2½	172027 10 11½
KENT		31166 1 10	51607 12 10½	92497 12 10½	71617 1 8½	84952 8 7½	100944 4 1½	140102 14 2	105515 15 3	82335 2 0½	102556 2 8
SUSSEX		5732 8 7	26932 5 11½	42076 11 5½	49683 16 10½	46456 12 3	59191 18 2	73288 15 2½	60786 6 0½	46502 0 8½	56305 1 10
WORCESTER		1292 17 8	2102 4 5½	26364 2 8	9405 14 6	17862 14 10½	14668 8 10½	15751 10 4½	19853 11 3½	35731 17 2½	4080 6 1
FARNHAM		1138 7 2½	4555 10 4½	8534 16 0	6121 4 3½	5256 11 1	9236 0 1	3941 6 6½	9715 11 11½	8340 14 2½	7048 4 9
ESSEX		210 5 0½	1126 13 5½	1939 3 5½	783 16 5	1035 1 4	1708 4 4½	1696 4 2½	1561 12 8½	1465 4 2½	616 15 0
NORTH CLAYS		276 14 11½	1540 4 6	2710 9 6½	1234 15 8	1126 7 11	3584 6 4½	220 18 10½	2209 9 9½	3336 9 10½	583 13 9
Sundry Small Districts in various parts of Britain		49 15 3	182 16 6	341 14 1½	171 14 10½	215 10 11	380 12 1½	205 13 6½	690 5 11½	866 14 8½	366 4 9
		£39866 10 6½	88047 8 1½	174804 10 1½	139018 4 3½	156905 7 0	189713 14 2½	233207 2 11½	200332 12 11½	178578 3 0½	171556 8 10

	Qrs.		Qrs.		Qrs.		Qrs.
Lindsey	343	Edwards	203	Cleave, A.	89	Potter	56
Springett, R. C. . .	340	Lloyd	191	Chapman	86	Champion	56
Green	338	Prosser	184	Thorpe	86	Norris	51
Rood, I. W.	335	Brewer	177	Wood, D.	84	Hett and Co.	50
Thurlby	333	Newton	167	Tabby	82	Stalwood	49
Pugh	293	Clarke, Henry . . .	153	Meeton	81	Shepherd	47
Todman	290	Hainstock	149	Saunders	81	Greeves	45
Kay	266	Braithwaite	136	Godfrey	81	Field and Co.	45
Jackson	261	Lashmar	135	Ray	79	Knight	43
West	251	Miller	119	Bigbee	77	Woolmer	43
Olley	243	Comber	115	Harland, E.	74	Bradfield	41
Brace	242	Mulley	114	Hopkins	72	Phillips	33
Carpenter, J. P. . .	233	Root	111	Woodruff	67	Smith, S.	32
Keep	219	Birt	104	Waigh	67	Sansam	32
Bell	216	Purcell	103	Batt	64	Keaney	32
Ward	215	Sizmur	99	Bassan	58	Briscoe	32
Stirling	210	Tyler	99	Carter	58	Brookes	31
Powditch	207	Dubbins	95	Steer, G.	56	Price	24

AGRICULTURAL REPORTS.

ESSEX.

We have deferred our usual report to a somewhat later period than usual, purposely to gather what information we could as to the plants of wheat in this county, and from our own observation and inquiry, we have come to the conclusion they were never in a more healthy and regular plant than this season; there is still some considerable breadth to come up, but we may draw some very safe conclusions from what has already appeared,—wire-worm and slug are as yet unknown to us this season, not having seen one piece affected to any injurious extent whatever; an unusual quantity is sown in our county, and when barley lands had been prepared for that grain it has in many cases been sown with wheat. Tares are unusually forward, and promising. Peas have in some cases been sown, but we have not yet seen any above ground. Cabbages and turnips have continued improving up to the present time. Outdoor-work during the last two months has progressed most rapidly, we never remember ploughing so generally forward; lands intended for peas, beans, mangel, turnips, &c. in many cases as forward as formerly in March; but barn-work (independent of what has been done by the machines) unusually backward; in some farm-yards, we will say many, not a new stack has been touched, whilst in some seasons we have known them by this time half emptied. Three causes operate to make this the case,—first, wheat and other grain having sold well previous to our last harvest, the farmer who had any to sell has been better able to meet his Michaelmas expenses than formerly; another cause is a general opinion among us, that grain of all kinds will range still higher in the spring and summer months in spite of all foreign supply. Reports having been circulated among us by well-informed men, that not sufficient corn can be found to meet the demand that must be made should the next harvest be at all protracted—possibly disappointment may follow, as it did in 1831, wheat was then ranging at one time with a crop something similar to the present year, somewhere about 70s., and great was the anticipations of scarcity previous to another harvest; and how did things turn out? why we kept our wheat nearly all, and took just on the eve of harvest 55s. for what we could at one time have made 70s.; at the same time we offer no advice on the subject to any of our brethren, as we feel we should very probably commit ourselves were we to do anything of the kind. And the last cause an unusual decrease in the number of our servants, and the employment given to them (in consequence of the fineness of the season,) in outdoor work. Where the men are we do not know. Month after month may pass without our having a single application from any of them for work, where sometimes formerly we had hundreds. The Eastern Counties' Rail-

way company commences operations in our neighbourhood immediately, which will also materially tend to increase the want of labourers, but we would rather suffer inconvenience from seeing our men well employed at good wages, than see them on starvation pay from the supply of labour being too great for demand. A but too successful attempt has lately been made in our town, to get together our labouring classes by a body of speculators, calling themselves delegates from the Working Men's Association. We have, fortunately, been hitherto free from these political societies; but, we find we have now to have our country labourers noisy claimants for the *people's charter*, *id est*, a share in the property of any and every one, who has had the industry to earn it, or the good fortune to inherit it. We deprecate these noisy and maddening torchlight meetings, concentrating, as the one to which we allude did, 500 or 600 of our labourers by call of playcard, and every other possible means to hear language not calculated for such men to hear, and advice, which none but slaves deluded by it would dare to follow out into practice. In our neighbourhood the hand of charity is continually being extended to the industrious in distress, wages have been raised in many cases 3s. per week to meet the increased price of provisions; and we fear if our men make up their minds to serve these would-be radical masters, they will find it a servitude anything but enviable. We are anxiously waiting the simultaneous appearance of Mr. Kimberly's Pamphlet, but would like to see it first, and if we approve of it, give our guinea afterwards. Having dispersed our guineas so freely lately among the advertizers of agricultural discoveries, and if fortunate enough to have a few left, we must button them up with this *only consolation*, that we have certainly done our part in giving a fair trial to them all, and must now leave others to the possession of those golden fortunes, which an early trial of any of their future discoveries may place within their reach. At the same time we would say, if Mr. Kimberly should be the means of discovering a method of manuring lands, at even half the present cost, he will do more to advance the interests of agriculture than ever one man has done before, and will deserve such a mark of gratitude as Government and his country will not be backward to give. Our cattle fairs have been unusually high in price, we should say the latter fairs have improved ten or fifteen per cent. on previous ones, and fear disappointments must follow where these prices have been acceded to. Our corn markets continue remunerative, and highly satisfactory to the seller. In our county it is generally considered we have a fair average crop of all kinds of corn, and a great part of what has been sold, bought for London and northern supply. *Little or no cloverseed has appeared.* Our agricultural show has taken place to-day.—Dec. 15.

WEST CUMBERLAND.

At the date of our last report, the harvest had not entirely concluded, and the weather was wet and unseasonable. Shortly afterwards, however, we experienced an atmospheric change—we had dry, piercing easterly winds, with severe frosts at night, and those who had oats out at the time, were enabled to secure them in good condition. During the stormy weather previously experienced, considerable quantities of grain were housed in a very improper condition, and we are afraid much of it will be injured. In some instances, stacks have been taken down for the purpose of drying the corn, and put up again in the fields. The protracted potato harvest has at length concluded, and we have not observed that much injury or bad effects have resulted from the late frosts, which set in before the latter part of them were taken up. We have lately had some very favourable weather for putting in the wheat crop, and nearly the whole of the fallow, potato, and turnip ground have been already sown under favourable circumstances. It is customary to stack the turnips in West Cumberland, and by this means the ground is much earlier sown than where they are eaten off by the stock, consequently the wheat season may be said to have concluded, with the exception of a little spring sowing. Spring-sown wheat is much more liable to be affected with smut, than that which is sown in the autumn, and this circumstance ought to convince the farmer that the spring is not the natural season for wheat. Agriculturists ought to be cautious in selecting their seeds, and particular care ought to be taken that the change should be from the production of another kind of soil, than the one they are sowing upon. It has been found by experience that wheat sown in the spring answers best with a rank seed, and we are persuaded that choice ground, ploughed early in the winter, with a judicious selection of seed, would answer well. The weather is favourable for field operations and the plough is daily going where the wheat has not been all sown. The leading of lime, town manure, fencing, draining &c., are all gradually proceeding with little or no interruption from the weather.

We have yet had no variation in the price of fat stock, though we may fully look for it from the scarcity that is approaching, and the scanty means the farmers have this season of fattening stalled cattle, in consequence of the scarcity of fodder, turnips and potatoes. Pork continues to sell from 5s. 3d. to 5s. 6d. per stone. Hay and straw sells readily. Seed hay at 6d. to 8d. per stone; straw at 4s. to 4s. 6d. per score of laps. The deficiency in the grain crop, is still much complained of by the farmer, and the miller and flour merchant, with equal justice complain of the very indifferent quality of the grain. Some of the samples of wheat and barley, shown in the surrounding markets in the district are of a most wretched description. We can mention some instances of uncommon failure in the quantity of the grain crops. Two samples of wheat were lately shown in Whitehaven, brought from a part of the country usually remarkable for producing ample grain crops; in one instance the sample shown was from the produce of six acres, the whole of which were sold for 10l. 3s.; the other sample was from the produce of four acres, the whole of which only brought the owner 6l. 10s. Indeed we are acquainted with instances in which the yield is not a sufficient compensation for the seed that produced it. Under these circumstances, by no means common, it will be readily conceived that the season has been a most disastrous one for the farmer in West Cumberland, where the average of wheat land will not make him a return of 3l. 10s. an acre, selling at the rate of 28s. per Carlisle bushel of 13 stone. To the agricultural labourer the winter is likely to be seriously oppressive. His earnings are about 10s. per week, deducting for broken days during inclement weather, which at the present rate of our markets, will afford but a scanty subsistence for himself and family. The West Cumberland farmer, this year has much to contend with; and we never saw him using greater exertion, neither did we ever see the work in the fields at this season in a state of greater

forwardness; a very great breadth of fallow has been ploughed up, and draining is going on with great spirit in every direction. Anxious as we know the farmer always is to meet the demands of his landlord, we are afraid some of them are unable to do so, as we witness more than the usual number of sales of stock and crop advertised at this early period of the season. We trust however, that the farmer's difficulties will procure him leniency at the hands of his landlord, and that a better day and a brighter season will dawn upon him and enable him to retrieve the disasters of the present period. We have for some time been of opinion that the farmers of West Cumberland, plough their fallows far too shallow; because lands are now generally hard ploughed, and therefore necessarily require deeper ploughing in order to give additional strength and support to the crop. The produce from deep ploughing has been found from experience to be much more abundant. In shallow soils the ploughman need not be afraid of turning up a little rust or clay, because the frost in winter will pulverise and improve the fresh soil in a way which will be found very beneficial in advancing the fulness of the crop. We would earnestly recommend the deeper ploughing of fallows to the consideration of every farmer, as we are convinced it will be found beneficial in its results. On dry soils deep ploughing prevents the effects of drought; and on cold wet soils, it lets in the water from the surface, and thus partially drains the land. Thus deep ploughing acts favourably upon fallows in all seasons, whether wet or dry, hot or cold, and we know from experience that the result will invariably prove satisfactory.—Dec. 20.

GENERAL AGRICULTURAL REPORT
FOR DECEMBER.

During the whole of this month the weather was much finer than we recollect to have noticed at the same period of the year for many seasons past; indeed, it was not until quite its latter end that ice of any thickness was produced, and even this circumstance occurred only in exposed situations. The heavy rains which fell in most parts of England so saturated the soil that it was not without much difficulty that the out-door farm operations, proceeded with usually in December, could be successfully carried on. However, we are happy to state that they are all exceedingly well in their place, and sufficiently forward.

We have received from all parts of England most favourable accounts respecting the appearance of the wheat plants. Those which have appeared above ground look extremely strong and healthy; but in some parts, in which it was late ere the soil was cleared of its crops, they are not observable. It is, therefore, a cherished hope that these favourable symptoms will not, as on some former occasions, be marred by any unforeseen atmospheric visitations, or the destructive ravages of the wire-worm, which last appears to be very seldom seen this year. With respect to the breadth of land sown with wheat, it is calculated, by competent judges, that it is by far more extensive than in any period during the last ten years. It is most gratifying that our farmers have adopted the desirable end of endeavouring to grow an increased quantity of wheat in order to provide for the wants of our rapidly increasing population. To render an account of a good cultivation of the soil is, at all times, and on all occasions, a most important and pleasing task, and it is rendered considerably more so at the present moment owing to an extended growth of wheat giving every person ample opportunity of obtaining a sufficiency of it to meet his necessitous wants, at a moderate price.

We view the growing of additional quantities of wheat in a most favourable light, since by it the importation of foreign wheat will, in the end, be rendered unnecessary, and the agriculturists will discover that their interests will be materially protected, it being well known, and generally admitted, that the money which is sent out of this country to purchase wheat in foreign climes is of serious loss, not only to them, but also the nation at large.

Much of the time and attention of the agricultural community have been spent in, and directed to, the holding of the annual cattle shows in most parts of the kingdom. It is a most gratifying circumstance that these extremely useful institutions are rapidly gaining ground in public estimation, and they afford proof, if proof were necessary, that farmers duly appreciate the efforts which have been made from time to time by the Duke of Richmond, Earl Spencer, and a long list of other noblemen as well as gentlemen, to support agriculture and enhance the British yeomen in the scale of importance. The stock shown at most, if not all the shows, particularly that of the Smithfield Club, has proved both in point of number and quality, superior to that on many previous occasions. A very erroneous impression has prevailed amongst some persons interested in the cultivation of the soil (not breeders of fat stock) respecting the pecuniary advantages of the present generally practised system of feeding both beasts and sheep for the purpose of exhibition at the various cattle shows—many having intimated to us their opinion that a great loss, when compared with the value of stock fed on natural herbage, must accrue to the owners. But, from actual experience, we are led to the conclusion that the very reverse is the case, as we have known a multiplicity of instances in which the prize beasts, and even those which have only been commended by the judges to have produced, comparatively speaking, more than beasts of proportionate size, symmetry, and quality fed solely on succulent food. It is, we conceive, the butchers and their customers who are the actual losers in purchasing prize stock (as the consumption of the whole of the fat is impossible) and not the breeders.

The exportation of potatoes to the United States, which, at one period, caused much anxious solicitude regarding the probable price which they would be held at, during the winter, has been almost wholly discontinued; whilst it is understood that the various shipments have not proved very remunerative to the speculators.

Notwithstanding the late season which has been experienced, in Scotland, the progress of ploughing and sowing has been satisfactory, and nearly the whole of the seed wheat has been committed to the earth. Most of the principal markets have exhibited but limited supplies of wheat, whilst the trade has proved animated, especially with superior samples, at advanced prices.

In Ireland, the weather has been, though wet, tolerably favourable to farming, and the young wheats are well reported. The value of wheat and oats has enhanced, with moderate supplies and a steady inquiry.

The following is a retrospective statement of the supplies and prices of fat stock exhibited and sold in Smithfield Cattle Market, in the course of the month:—

The supplies of beasts have amounted to 15,720; of sheep, 135,102; of calves, 1,508; and of pigs, 5,237. The quality of the former has not, perhaps, been excelled on any preceding occasion within the memory of the oldest man living; whilst the Great

Christmas market afforded a rich treat to all who are conversant with live stock. On that occasion, the most eminent, and, at the same time, extensive breeders of beasts residing in England—for instance, Sir Charles Knightly, Sir Charles Burrell, Lord Leicester, and the Duke of Richmond—sent for sale some most splendid animals, which excited the admiration of all who beheld them.

About 900 of the Scots and homebreds which have formed part of the above supplies, have been received from Norfolk; 500 Devons, runts, Scots, and homebreds, from Suffolk; 320 Scots, runts, Devons, and homebreds, from Essex; 300 runts and Devons, from Cambridgeshire; 3,500 short-horns from Lincolnshire; 2,200 short-horns and runts from Leicestershire; 1,500 short-horns and runts from Northamptonshire; 700 Devons, Scots, runts, and Irish beasts from Bedfordshire and Warwickshire; 100 runts from Pembrokeshire; 1,000 Herefords from Herefordshire; 1,700 Devons from Devonshire; 130 Scots, by Sea, from Scotland; 130 oxen, runts, and heifers from Sussex; 60 cows, runts, and Devons from Surrey; 40 runts from Kent. The remainder of the supply of beasts was chiefly derived from the immediate vicinity of the metropolis.

The quotations of beef have ranged from 2s. 2d. to 5s. 2d.; of mutton, 3s. 4d. to 5s. 4d.; of veal, 4s. to 5s.; and of pork, 4s. to 5s. 4d. per 8lbs., to sink the offals.

A STATEMENT AND COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, December 25, 1837, and this day, Monday, December 24, 1838.

At per 8lbs. to sink the offals.

	Dec. 25, 1837.				Dec. 24, 1838.			
	s.	d.	s.	d.	s.	d.	s.	d.
Coarse & inferior Beasts	2	4	to	2	4	..	2	4
Second quality do.	2	6	3	0	..	2	8	3
Prime large Oxen.....	3	4	3	6	..	3	4	3
Prime Scots, &c.....	3	8	4	0	..	3	10	4
Coarse & inferior Beasts	2	10	3	0	..	3	8	3
Second quality do.	3	2	3	4	..	4	2	4
Prime coarse woolled do.	3	8	3	10	..	4	8	4
Prime Southdown do..	4	0	4	4	..	5	0	5
Large coarse Calves ..	4	0	4	6	..	3	10	4
Prime small ditto.	4	8	5	0	..	4	10	5
Large Hogs.....	3	4	4	4	..	3	10	4
Neat small Porkers ..	4	8	5	2	..	4	8	5

SUPPLIES.

	Dec. 25, 1837.	Dec. 24, 1838.
Beasts.....	603	1,012
Sheep	4,939	8,022
Calves.....	16	15
Pigs.....	92	70

By the above comparison, it appears, that the supply of Monday, Dec. 25, 1837, embraced 409 Beasts, and 4,083 Sheep less; 1 Calf, and 22 Pigs more than that of Monday, Dec. 24, 1838.

The arrivals of slaughtered meat from various distant parts, up to Newgate and Leadenhall Markets, have not been so extensive as has been sometimes the case: whilst they have amounted to 200 carcasses of beef; 2,700 do. of mutton; 4,020 do. of veal; and 7,900 do. of pork, the latter chiefly from the West of England. Generally speaking, the supplies have been rather inferior, and disposed of at low prices.

An epidemic disease prevails at this time amongst the cows in the neighbourhood of Hondau and Pont-Chatrau, in France. Large swellings appear on the feet, to such an extent, as to prevent them from walking. The animals lose their appetites, and foam greatly at the mouth. It is said that there is no account of any such disease in the veterinary works.

GARDENING OPERATIONS FOR
JANUARY.

(ORIGINAL.)

Prepare dung for hotbeds without loss of time; about the middle, or towards the end of the month, put up a bed for early cucumbers and melons.

Prepare a bed for early asparagus, and see that the dung be well fermented, and the greatest portion of the steam evaporated before planting; select strong healthy roots of five or six years growth, and let them be taken up with care, so as to injure the fleshy fibres as little as possible; cover the surface of the bed with a few inches of dry sandy earth; place the roots closely together, and cover them with light mould to the depth of four or five inches; give air in fine weather; put up a similar bed for potatoes; about the middle of the month, sow on a slight hotbed, small salad, radishes, lettuce, and horn carrot; a few pots of mint and tarragon, should be placed in a frame or forcing house; rhubarb and sea kale may be forced in pits, or in the open ground by covering with pots and dung, or leaves; a few early peas and beans may be sown in boxes for transplanting.

Keep the temperature of the pinery at from 60° to 65°, very little air or water is required during the month.

Cleanse and white-wash your vinery; anoint the vines with a mixture of soft soap and sulphur; see that the flues are in good repair, and everything in order to commence forcing about the middle or end of the month; attend also to the peach house as directed above.

Let the greenhouse have plenty of air in fine weather, very little water is necessary at this season; be sparing of fire-heat, the mere exclusion of frost and damp is sufficient; remove decayed leaves and attend to general neatness; in the plant stove, give heat, air and water with discretion.

Fill all spare room in forcing houses, and pits with strawberries, and kidney beans.

Protect tender plants in the flower garden, shrubbery, and lawn, with straw mats, fern or tan; look to alpine, auriculas, carnations, and other tender plants in pots, and remove decayed leaves, damp, and weeds, give plenty of air by removing the glasses in fine weather; plant bulbs, anemones, and ranunculuses; if not done in November, rough dig flower borders in dry weather; about the end of the month plant box, and thrift-edgings if the weather be mild and dry; plant hardy shrubs and trees; rake leaves, roll and sweep walks and lawns; force bulbs, roses, and other shrubs.

Prune the hardier sorts of fruit trees; apricots may be pruned about the end of the month; plant and secure with stakes; look to your onions and fruit, and remove all those that are decayed or tainted.

Sow early peas and beans, the beginning of the month on a warm border, and the larger sorts about the third week; earth up and protect peas that are above ground, also protect parsley for daily use. Sow spinach and parsley about the end of the month, also a portion of lettuce, onions, radishes, and small salad on a dry warm border, if the weather be mild and dry; take advantage of a dry day to earth up celery, if it requires it, and tie up endive; attend to mushroom beds, and see that they are sufficiently covered to protect them from the rain and frost; examine young cauliflower plants in frames, and remove all decayed leaves and weeds, and give plenty of air, when the weather will admit; trench,

dig, and ridge all vacant pieces of ground, turn and well mix dung and compost heaps, and destroy mice and other vermin. See that your ice house is filled the first opportunity.
J. T.

THE NEW VARIETIES OF WHEAT.—Sir Thos. Gooch, Bart., speaking of an experiment which he made this year, at Benacre Hall, Suffolk, says.—“The produce from one acre of land (good mixed soil) of five different sorts of wheat, and the weight of each sort per coomb, (N. B. four bushels the *Suffolk* measure,) was as follows:—

The Golden Drop, 9 coomb, 1 bush. 2 pecks, per acre, weighing 17 stone 6lbs. per coomb.

English Red, 9 coomb, 1 bush. 2 pecks, per acre, weighing 17 stone, 3lbs. per coomb.

Great Red, 9 coomb 2 bush., $\frac{3}{4}$ peck per acre, weighing 16 stone 11lbs. per coomb.

Whittington new White Wheat, 9 coomb, 3 bush., per acre, weighing 16 stone 3lbs. 8 ounces per coomb.

Thumb Wheat, 9 coomb 2 peck, per acre, weighing 16 stone 10lbs. per coomb.

It appears to me that the Golden Drop will, on the whole, produce me the most money, and the Thumb wheat the least. The Chevalier wheat does not answer on my land; the Whittington produces the most straw, but is rather coarse.”

IMPORTANT INVENTION.—Several highly successful and satisfactory experiments have lately been made of a very ingenious invention, having for its object the prevention of accidents from horses taking fright, starting, or running away. The machinery, with but trifling expense, can be applied to carriages, cabs, or any other description of vehicles. Its mode of operation is as follows:—On the nave of the wheel is fixed a small gun metal wheel; in front of the axle runs a steel spindle, with small cog attached; over the spindle is a cylinder, and to which this pulley or check string is affixed. The moment it is put in action, the spindle advances, and the cog revolves gradually round the gun metal wheel, which is affixed on the nave, carrying with it reins leading from the horse's head, composed of catgut, or patent cord, covered with leather. As the wheel revolves, the cylinder, which is about an inch in diameter, is gathering up the reins, until the horses are brought to a stand still; when, by letting loose the check string, the horses immediately have their heads free. The security of the invention may be imagined when it is stated, that a child inside the carriage can with ease, and at pleasure, stop the most spirited and powerful cattle, supposing the reins to be broken, or the coachman's command over a vicious or unruly team overcome.

MAN AND SWINE.—I may here take occasion to observe, that there is a remarkable similarity of constitution between man and the sow. Scrofula, which word is derived from the Latin name of the sow, “scrof,” is peculiar to man and swine. These last are also subject to apoplexy: a friend of mine lost several by this disease. They are also liable to softening of the brain; a disease rare, if at all to be met with among other brutes, but common in the human subject. They are also liable to tubercles in the lungs and liver, to disease of the heart, to ruptures of blood-vessels, accidents almost peculiar to mankind with them. And, more remarkable still, they are subject to a species of madness quite different from the hydrophobia of dogs and other brutes, but bearing an exact resemblance to human insanity. This resemblance between man and swine I notice that Juvenal represents the Jews as being in part aware of.

“Nec distare putant (that is, the Jews), humana carne, scillam.”

SATIRE, xiv., line 98.

—*Dick's Diet and Regimen.*

ON THE CORN LAWS.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—The present high price of grain, which is likely to continue till the next harvest, unless some alteration in the Corn Laws takes place, must necessarily call forth numerous remarks on their existing state, and enquiries into their probable improvement. The following remarks, after having well argued all their relative merits, appear best calculated to afford protection and security to the community at large.

The first, and which is the main question, is the duty; now if that was fixed at 12s. for wheat, (and so in proportion, for other grain and pulse) with open ports, the duty to be paid on all, one month after ship's entry at the Custom House; the markets would always be supplied with grain, and the price would be nearly stationary at from 45s. to 50s. for wheat, (and so in proportion with other grain,) it would then give a remunerating profit to the home growers, and a like advantage to the foreign cultivator, besides considerably improving the revenue of the Exchequer. As they now are, they afford no protection to the English farmer, or encouragement to the foreign, in fact the only benefit that does accrue from them, is to the speculator, and to him after all but badly, for the risk he embarked in.

The protection which the English grower was to receive by this act, was always to guarantee him a profitable price for his corn; but now when he looks forward for the protection which he is entitled to, he finds it is merely nominal, and instead of obtaining for his corn a price that will make up for the deficiency of his crops, sees foreign corn come into the market nearly duty free, running away with his profit.

To the foreign grower, (who is willing to supply us with corn, and to import it into our ports paying a fixed duty for that advantage,) it gives no security

to, at the same time dealing very unfairly with him, for not allowing his corn to come on the same terms as other foreign agricultural produce does, into our market, viz., such as butter, cheese, &c., &c., at a fixed duty, which brings that produce on equitable terms with ours, benefiting all parties.

To the speculator in foreign grain, (who risks his capital in such capricious articles, owing to the fluctuating duties, causing uncertain profits,) it does not remunerate accordingly, but if the duty was fixed he would then know what he was about, and could then make his calculations on a sound basis, instead of now working in the dark.

As present appearances indicate a further rise in corn, which no doubt will be at a 100s. before long, it is the bounden duty of the legislature on their re-assembling, to discuss seriously on their present severe working, particularly towards the labouring classes, whose wages are not adequate to the price of bread. Parliament ought certainly to come to some final arrangement for a fixed duty, if it were only to prevent our farmers from sowing too great a breadth of wheat in the spring, which they otherwise will do if the price is high; and with that already sown, which is considerably more than usual, should the summer turn out as wet and uncongenial as the last, which it is just as likely as not to do in our uncertain climate, the period will indeed be critical, and then we shall have not only bread, but meat, at most exorbitant prices; if on the contrary we have a favourable summer, and a plentiful harvest, then indeed will we have just cause to thank the Almighty for his kind interposition, in perverting the crisis, which the legislature took no pains to remove.

If you consider the above remarks worthy of a place in your valuable magazine, and if they tend to throw any light on the present obscurity of our Corn Laws, it will much gratify, your constant reader and subscriber,

T. J. W.

Surrey, Dec. 22.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

EXETER FAIR.—Of fat bullocks already purchased for our Christmas market, and brought to a high state of proof, with a view to sale for that occasion; there has been a most splendid show. Among the exhibitors of those first spoken of, have been Messrs. Manley and Son, England and Son, T. Beedell, G. and J. Lake, Batting, Chamberlain, &c. &c. Of the latter, G. Turner, J. Gould, Messrs. J. and W. Pidsley, R. Browne, E. Trood, W. Ley, &c., &c. Messrs. England's were the fine bullocks purchased at the Taunton cattle show, besides purchases in this county, and made this morning; and among the fine stock shown by Mr. T. Beedell, was a cow, that from her superiority of breed excited general admiration. This fine animal was from the farm of Sir Stafford Northcote, and it appeared to be a matter of regret among agriculturists that one so perfect instead of being fattened, had not been kept to breed from. Messrs. Manleys' was a superb show, consisting of some half dozen Devons, brought to the highest state of proof. This was also the character of those prepared for their customers by Messrs. Lake, Mr. Batting's of Newton St. Cyres, and North-street, was the remarkable fine heifer, fed on the farm of, and purchased of Mr. Richard Browne, of Dunscombe, Crediton, and spoken of elsewhere. Mr. Chamberlain's of Stoke Canon, and High-street were also of a most superior description. A cow from the farm of Mr. Geo. Turner, of Barton, Exminster, was a most extraordinary thing of the kind: it is six, going seven years.

and in point of proof, it may be called perfect; it was purchased by Mr. Robert Browne of this city, for rather over 12s. per score. A Buss likewise, from the farm of Mr. John Gould, of Poltmore, must be spoken of in similar terms; it was the subject of general conversation and admiration, and was purchased by Messrs. England, at 12s. per score. To return, however to the general business of the fair. Apart from these extraordinary animals, the show of fat bullocks was not equal to what we have seen at this fair; a remark that more particularly applies to the oxen, which do not give evidence of that high state of condition, that at this season this description of animals have been wont to attain. And, although from data that may be relied on, we can set down the primest things at from 11s. 6d. to 12s. per score, the quotation for those previously spoken of cannot be carried higher than from 10s. to 11s. per score. All the best beef, however, has been sold; but for the middle rates there has not been an equal demand, and a considerable portion of this remains undisposed of. With respect to other descriptions of cattle the fair has been of a medium description, certainly not an over large one, and with but few East country dealers in it. For plough oxen, as well as steers, however, very high prices have been asked; indeed, for the former, from 32l. to 40l. the pair, and the latter, from 20l. to 28l. the pair. And these terms being in several instances rigidly insisted upon, has checked business, and many things consequently remain unsold. Such poor stock, likewise

as has been disposed of has fetched strong prices ; indeed we are in a situation, in some instances, to name a better figure than 6s. per score. A few sheep have been exhibited, among which should be mentioned three ewes, from the farm of Mr. George Turner, these having drawn general attention. They are five years old ; one of them being estimated as 50lbs. the quarter, while the three are estimated to average 45lbs. per quarter, and they were promptly sold to butchers of this city, at 6d. per lb.

BOSTON MART was well supplied with fat stock, which realized high prices ; inferior articles were scarce and in great demand. A bullock, bred by Mr. Bissill, of Sutterton, and fed by the Rev. Basil Berridge, of Algarkirke, was generally admired, as were also 2 twin oxen, fed by John Rowson, Esq., and bought by Mr. Hewitson for 80 guineas. Mr. James Artindale exhibited a very superior short-horned white cow, bred by Mr. Cartwright, and fed by himself, and Mr. Thomas, of Holbeach Marsh, drew a host of admirers round his fine Lincolnshire ox, bred and fed by himself. The show was better than has been known for many years past. Some fine sheep carcasses were shown in the shops of Mr. Artindale and Mr. Rogers, butchers ; the former supplied by Mr. Dawson, of Leverton, and the latter by Mr. Topham, of Keal, and Mr. Cooke, of Burgh.

TAVISTOCK FAIR.—This fair has been improving for several years past beyond all expectation, and is become equal, if not superior to Exeter for fat cattle, and the graziers in the neighbourhood are surprised that more dealers from the eastern part of the county, and from the county of Cornwall, do not attend. Their interest, however, will soon compel them to turn their attention. John Gubbins Newton, Esq., of Millaton House, Bridestowe, had 20 fat oxen, the best lot he ever produced in this town—averaging 60 score. Mr. Brendon, of Timberham, in the parish of Lezant, had two oxen of very prime quality, sold for upwards of 70 guineas. Mr. Tozer, of Coryton, had one cow, the best in the fair, 56 score, and sold for upwards of 34l. : also four very prime South Ham steers, averaging 45 score. Mr. Rowe, of Lamerton, had 60 cows, 25 of the lot averaged 40 score ; he has for many years past shown the best lot of cows at this fair ; also two beautiful Scotch cows, bought from the stock of J. Knight, Esq., of Symon's Bath, Exmore, these were sold to Messrs. Crang and Nickary, and will be slaughtered in this town and Launceston. (*These Scotch had the ribbons.*) Mr. G. Northey also showed some very prime Scotch from the same stock. Mr. Spear, of Dunterton, had two cows which were very good, and sold to Mr. James Cuddiford, of Plymouth, for 59l. Mr. C. has been noted for many years

past for producing the best Christmas beef in Plymouth market. Mr. Robert Bickle showed a North Devon Martin heifer of very prime quality and small bone, about 56 score, which he intends slaughtering himself in this town. Mr. John Weekes, of Bradstone Barton, showed five cows of the North Devon breed, very fine bone and good quality, which he sold to the Rev. Dr. Rodds Bailiff, of Trebartha Hall, in the county of Cornwall. Mr. W. B. Cudlip showed a pen of very prime sheep, sold at 4l. each. Mr. Wm. Jeffrey also a pen of do., which made 3l. 3s. each. Mr. Arthurs showed a Dartmoor wether which was sold at 6d. per lb., 53lbs. per qr.

HOLKHAM ANNUAL CATTLE SALE attracted a larger number of visitors than ever remembered on this occasion, and there appeared to be a growing interest in this exhibition among agriculturists. The noble Earl was present at the sale in renovated health, and with his usual energy and kindness kept up a continued conversation with all who had given him the pleasure of their company. Lord Leicester was accompanied by the gallant veteran, Lord Lynedoch, who expressed great interest in all the proceedings of the day, which his Lordship devoted to the scene. Mr. Handley, M.P., another agriculturist, was also present, together with the Hon. and Revds. E. S. and Thos. Keppel, Lord Coke, and his brothers, Dennis Gunton, Esq., and Mr. Gunton, Jun. ; Revs. Hogg, Browning, and Collyer ; Messrs. Palmer, Gales, Overman, Taylor, S. and H. Abbot, and Hill, with very many of the principal yeomen from distant parts of Norfolk and Suffolk. Amongst the dealers were Messrs. Sharman, Randall, Chase, (of Bungay) Sayer, Burgess, Nicholson, Collison, &c. Indeed, we recognized many faces that reminded us of the happy by-gone days of the sheep-shearing ; while looking on the renewed vigour of the venerable Earl, it appeared as if the all-wise Creator had renewed the lease of a life so well spent, in order that he might be able to fix more deeply on the mind of the heir to his name, that love and knowledge of the great science he himself has so adorned, ennobled, and advanced, and thus lead his son to promote still further the interests of a class to whom his father's life had been so warmly devoted. The competition for the cattle was very spirited. Mr. Randall, of Swaffham, purchased the best Devon ox for 44l., and Lord Leicester most kindly offered to have it conveyed to Swaffham in his van. Mr. Chase, of Bungay, secured the five beautiful Devon Beasts, their prices varying from 30 to 35l. per head. The two-shear Downs were bought by Mr. Sayer, which reached from 4l. to four guineas a-head. The pigs sold as high as 7l. 5s., the average of the twenty reaching 5l. 12s. 6d. each.—*Norwich Mercury.*

REVIEW OF THE CORN TRADE

DURING THE MONTH OF DECEMBER.

During the last month, the supply of home grown wheat generally in the London market has been unusually small for the season of the year. This circumstance has not originated however in any deficiency of delivery on the part of the farmers in the home counties, for we understand it has been equal to that of former years at the same period. The bad state of the crop of this article to the north of the Humber, throughout the whole of Scotland, and in many districts of Ireland, has caused short supplies generally in all the great markets of consumption, and consequently the demand for wheat in those counties, wherein the crop has been abundant, has been much increased, and this circumstance has directed the deliveries of grain

from the farmers, which in common seasons come into the London markets, into other channels of more profitable consumption. Hence in London there has not yet been an abundant supply of wheat of home growth, and prices consequently have gradually advanced, until the average prices have again admitted foreign wheat into consumption at the low duty of 1s. per qr. Although we have already, repeatedly, directed the attention of our agricultural readers, to various defects in the existing system of corn laws, still we find ourselves again compelled to resume the same subject, for we feel a moral conviction that some remedy must soon be applied to these evils, not only for the sake and best interests of agriculture, but also

for those of the community at large. That the average prices are frequently struck incorrectly, admits not of any doubt. Indeed there is scarcely one season, in which any chance exists of foreign grain being admitted for home consumption, wherein the averages have not been tampered with, and the duties rendered higher or lower than the circumstances of the corn trade, and the state of our home crops could by any possibility justify. The admission of foreign grain, should not any longer be permitted to depend on a system which the private feelings and interested profits of the corn importers from abroad, and of the growers at home can so easily pervert to the promotion of their own speculations, and to the injury of all who have embarked their prosperity in, and applied their industry and talents to, the pursuits of legitimate agriculture, and the tillage of the soil. The British Empire has arrived at a high degree of prosperity in agriculture, in commerce, and in manufactures. Commerce and manufactures have reached their present eminence entirely through the assistance which they have received from those laws, by which they have been, and still are, protected from foreign competition in our home markets of consumption. Shipping is protected in the coasting trade against foreign interference entirely. Linen is protected against German and other foreign manufactures, by a heavy duty on their importation. Our mining interests are also protected by the total prohibitions for home use of various descriptions of foreign mineral products, and in short, there is not one article of British industry which receives not some degree of protection or other in this country, with the exception of agriculture, which, this season sufficiently proves, receives no adequate protection from the existing system of corn laws, and their amendment is consequently now reduced to a work of necessity. That these laws, imperfect though they be however, have been of the greatest public benefit, admits of no dispute. They have been the means of bringing into profitable cultivation, a vast extent of land, previously, almost in a state of nature, and rendered it useful to the necessities and luxuries of the people. There is still however, a great deal more to be done in the culture of the fields, which cannot be so speedily effected, as by rendering the present corn laws more perfect, than they are at present, and by extending to this the most important interest in the state, the same amount of protection, which is, most properly, given to every other department of British industry. To encourage agriculture, the taxes imposed on agricultural products should be, and most easily can be, very considerably reduced. Independent of indirect taxes, barley alone pays direct taxes to the amount of nearly twelve million sterling annually. On malt, the charge of twenty shillings per qr., is exceedingly prejudicial to the interest of the barley grower. An *ad valorem* duty of thirty per cent. on all foreign grain imported into this country, would enable the Chancellor of the Exchequer to reduce this oppressive duty from 20s. to 13s. 4d. per qr., would increase the amount now paid into the Treasury for these duties, would open a market for the consumption of an additional quantity of barley to the extent probably of from two to three millions of quarters, and thus an additional income would be given to the agricultural interest, whilst the great body of barley consumers, would receive nearly double quantity for the same money. This season the quantity of foreign wheat entered

for home consumption, has already exceeded one and a half millions of quarters, and before the crop of next season can be brought into consumption in September or October next, this quantity in every probability will be doubled. The law admits these immense supplies of foreign wheat into consumption on the payment of the paltry duty of 1s. per qr., and this is the extent of protection which the home producer receives, when any deficiency occurs in the harvest. The Chancellor of the Exchequer, had the corn laws been amended some years ago, would have this season increased the revenue by upwards of two millions sterling, drawn from foreign wheat alone, and wheat would not at the present time have been at 1s. per qr. higher in consequence thereof, for the importers would have added the duty to the expenses and charges of transport, the same as they do freight and marine insurance, and their purchases abroad would have been regulated accordingly; in fact the foreign wheat grower would have received less money for his produce by the amount of the duty chargeable here, and thus would he pay something towards the heavy public taxes paid by the home grower, for the privilege of selling the surplus of his wheat in the British market. Our home farmers must pay their proportion of taxes from their private resources, should their crops be inadequate for this purpose, and unfortunately a great many now find themselves placed in this disagreeable position, by the partial failure of the last wheat crop. Foreign wheat surely should be charged something towards these public burdens paid by our own agriculturists, and the corn laws should be so amended as to produce in future this most just effect, for it is most injurious to the public interest, that foreign nations should reap advantages, in a pecuniary point of view, from any failure in our crops by not being charged with duty, equal to that charged on our growth at home, on that portion of their property sent into consumption in these kingdoms. That a considerable alteration therefore in the corn laws is necessary to the best interests of agriculture, and consequently of the people in general, must be obvious to every person who can bestow cool consideration on a subject so extremely important, and that foreign produce when admitted into these kingdoms for consumption, should be charged with duties equal to taxes paid by our farmers and growers at home, and also equal to the protection afforded to every other class of industry in the United Kingdom against foreign goods when brought into our markets for home use, would be only an act of common justice, and is rendered necessary by the state of the revenue itself, so very defective for commercial reasons during the last two years, and which, for the next two years, at all events, must be rendered still more so, from the high value of the necessaries of life, produced by the too general failure throughout Europe, in the quantity and quality of the crops of various articles of agricultural produce during the last unpropitious season. Several of the public journals as well in the manufacturing districts, as in the Metropolis itself, are again availing themselves of the discontent, which the high price of bread is rapidly producing amongst the great body of the people, and denouncing the corn laws as the sole origin of the calamity. Now the smallest degree of reflection must show that this charge has not the slightest foundation in reality, for the low rate of duty invites the proprietors of foreign grain to send all that they can spare into our markets for sale, and that this invi-

tation will be accepted of, to its greatest extent, the importations already made, and that which will be made before the close of the current year, will sufficiently verify. The consumption of foreign wheat in the United Kingdom during the season of 1838-9, will be at least as large, if not larger than it has been for any season during the last half century, and therefore the corn laws cannot be blamed for the high rates, which bread corn has reached this year, on the contrary. had they not existed, the calamity of the late unfavourable state of the weather would have been very considerably increased. To amend these laws is necessary, but their entire repeal must be followed by general ruin to almost every class of British society. Agricultural improvement cannot be effected, unless through the medium of capital, and during the last quarter of a century, an immense sum has been embarked in the culture of Great Britain and Ireland. The consequence has been a more than proportionable increase in all articles of agricultural production. Grain is now produced in large quantities on lands which previously were barren wastes, and fields in cultivation formerly, now under an improved system of agriculture, produce one-third—in many instances one-half—more than they did in the beginning of the present century. These great results have been effected by a very imperfect mode of legal protection to the agricultural interest; but, imperfect as it is, should it be removed by the repeal of the corn laws, additional improvements, both in Great Britain and in Ireland, must at the same time entirely cease. Nor will the misfortune find its termination in this partial evil;—the capital embarked in the cultivation of the soil cannot remain stationary; it must either be worked, or it must be totally lost: the latter will be the result if the protection to agricultural pursuits should be withdrawn. Do those journalists reflect on the fatal consequences to the other classes of society which must follow the ruin of those whose property, whose talents and whose industry have been employed in agricultural pursuits? There is not one order in British society which would not severely suffer by such an event. The manufacturer not only would lose a great part of the future consumption of those articles produced by his capital and industry, but would likewise be involved in the pecuniary difficulties of the landed proprietors and of their tenantry. No increase of foreign commerce could in any way make good the deficiency in consumption which the decreased demand for goods on the part of the agricultural interest must occasion. The consumption of goods among the manufacturers and traders themselves would also gradually fall away, until universal suffering would desolate the land. In 1822, when the land proprietors and the land leasers suffered so very severely from the alterations in the currency, commercial men at first anticipated no evil; on the contrary, it was the general opinion amongst them, that, with the fall in the value of land and of rents of every description, their prosperity would be proportionably increased, and they continued to labour under hopes so utterly delusive until the year 1825, when—and in 1826—the consequences of agricultural depression fell on them with the most destructive violence, and general bankruptcy spread to a most alarming extent throughout the whole of the United Kingdom. British society can at present be best assimilated to a chain, the links of which depend on each other for support. Should the link

of agriculture be once removed, the chain of British society, under its present constitution, must cease to exist, and years of industry and of labour would be requisite to its restoration. There is no country in the civilized portion of the earth wherein cheap provisions and general prosperity exist together; indeed, they cannot exist together, for they are not consistent with each other. The farmer must be paid for his labour and capital in the same proportion that the manufacturer is paid for articles produced by his industry. It is by comparison only that the intrinsic price of any thing can be ascertained, and to try the value of wheat by this ordeal in the British Empire, we are persuaded that our price of 75s. is not higher than the Polish one of 40s. is in that kingdom at the present moment. To meddle incautiously with the corn laws no minister in this country would venture who has any respect for the collection of the annual revenue. An inclement season has, and periodically does produce much suffering, but no legal enactments can avert such misfortunes beyond granting that degree of encouragement to the cultivation of our fields at home, which must eventually be attended by the most beneficial consequences to the population in general. It is only by the increase of our home produce that the bad consequences of a deficient crop can be alleviated, and not certainly by the destruction of those who are most productively employed in raising all the necessaries and luxuries of life. It is for these reasons that we again call the attention of our readers, to whatever class of society they may belong, to the corn laws, and that we point out to them certain alterations, which we think would be a safe, and at the same time, a beneficial remedy to various defects which undoubtedly do exist in their construction, and the evils of which must now for a year or two be in a particular degree injurious to the public revenue. If they cannot be rendered so perfect as to give the same degree of protection to the agricultural interest as other laws give to shipping, mining, commerce, and manufactures, then place the whole on an equality, repeal all descriptions of protection, and agriculture will have no particular reason to complain; indeed, the ruin of the fund proprietor probably will be the only unfavourable circumstance resulting from the abandonment of the best interests of this great empire, to the industry and talents of foreign nations. At Manchester and other manufacturing places, wherein public meetings have been held, strong resolutions have been passed against the imposition of any duty whatever on foreign agricultural produce, but solemn silence is held respecting the protective duties levied here on all articles of foreign manufacture. The farmers consume highly taxed foreign clothing, or cannot consume it at all, but the manufacturers must be permitted to consume foreign provisions untaxed, because their interest will be promoted by this permission. We would, however, recommend to them a still better and easier mode of assisting themselves, for, to obtain provisions for nothing, and to compel the producers of them to pay well for British manufactures, will be a more effective plan for this purpose even than their present most unjust demands on the government of the United Kingdom. That the high price of wheaten bread is at present a great public calamity admits not of the slightest doubt, but it must be attributed to an unfavourable season solely, and not to the workings of the corn laws, for we repeat that did these laws not exist, the importation of

foreign wheat could not, under any circumstances, have been larger than it has been, and will continue to be so long as the deficiency in our own growth is not made good, for even already in numerous foreign ports, there is a much greater quantity of wheat ready for shipment than shipping can be procured for its transport. In all the ports of the Black Sea, in Constantinople, and many other places in the Turkish empire, the want of ships is in a most particular degree complained of, and the quantity of wheat, of the finest quality too, which will eventually be received in Great Britain from these quarters, will be much more extensive than is at present generally expected. Prices there are extremely low, but the scarcity of shipping has caused freights to advance to 12s. per quarter. From the Adriatic and from Italy, (Naples excepted) large supplies are also either on their passage, or waiting for the means of transport. Similar observations apply likewise to several districts in Spain, to Portugal and to France generally, from all of which, before the end of this corn season, an abundant arrival of wheat of excellent quality will also take place. The corn laws invite these importations and cannot prohibit them. Abundant crops in this country, and the corn laws have been the sole means of rendering the crops latterly more abundant than even the increased population required, have, for a few years now caused low prices, and low prices have rendered the importation of foreign wheat unprofitable. Last year a failure in the wheat crop has unfortunately occurred, and high prices are the natural consequence. The foreign corn trade has become very profitable in consequence of the improvement of prices, and a larger quantity of foreign corn can be obtained than ships can be procured for its importation. In Holland shipments of grain to a considerable extent are at present in progress, and from Hamburg alone fifty thousand quarters at least may be soon expected to arrive, should the Elbe remain free from ice for another week or two. From all the ports without the Baltic large arrivals depend on similar circumstances, and thus the deficiency in our growth at home will be, at all events, partly supplied until the spring open the Baltic rivers, and the Vistula again fill the ports of Königsberg, Dantzic, &c., with Polish wheats. Notwithstanding the partial failure of the crop in Poland, still the high prices to be obtained here, must induce the land proprietors there to forward as largely as they can for shipment, and, towards the end of spring and during the ensuing summer, large supplies will be received from all the ports within the Baltic Sea, should prices continue to throw out sufficient inducements for the operations of those whose business consists in the foreign corn trade. Although consumers, therefore, unfortunately must pay high prices for some time to come, yet for wheaten bread still there exists not any cause for the apprehension at present entertained of the scarcity being still more oppressively felt than it is at the present time, indeed we should rather think that the economy in consumption, which high prices universally create, will, before the conclusion of the spring-months, so materially influence the value of wheat, as to render sales at all events difficult at the present high prices. This must more particularly be the case, should the weather then be favourable to the growing wheat crop. At the close of last year the young wheats were looking healthy and appeared to come away well from the ground. The winter seed had been got very favourably into the fields, and even in the north

of England and throughout the whole of Scotland the same observations may be made, although in November last the state of the weather did not then warrant very favourable anticipations of the next wheat crop.

As we have already stated, the London market was not, during the month of December, supplied with that quantity of wheat from the home counties, which is usually the case at the same period of the year. Prices have consequently improved more considerably than was previously anticipated, even by those best versed in the corn trade, for fine qualities must be noted from 8s. to 10s. per quarter dearer than they were in the middle of November last, and the same advance must also be quoted on the average price of all descriptions of wheat sold in the London market. This deficiency in the supply of English wheat has directed the attention of consumers to foreign samples, and the sales of them have been much more extensive than had been previously expected. This large demand for foreign wheat has not solely been occasioned by purchasers for the London consumption, but also because large quantities have been shipped to several other markets, where the deficiency in the deliveries of wheat by the farmers in the immediate neighbourhood has created an increased demand from distant quarters. In Liverpool, Bristol, and several other large markets, the bad quality of the present crop of Irish wheat, with which for several years past they have been very largely supplied, has rendered supplies from other quarters absolutely necessary, and the advance in prices has been in several of them even more extensive than it has been in London; but the high price of bread must eventually limit the consumption of wheat, and may after all furnish the best remedy for the present deficiency in wheat. Bread is now nearly double in value what it was last year, and this fact must of itself cause economy amongst its consumers. It may not be unreasonable to calculate this saving from waste at one-sixth of the annual consumption, and this at all events may be equal to an importation from abroad of two millions of quarters.

With barley the London market has continued to be well supplied throughout the month, and with very few exceptions the quality has been good. In prices a considerable improvement has occurred, principally to be attributed to a large demand for it for grinding purposes, the high price of wheat rendering this application of it both profitable and legitimate. The consumption of malt no doubt must be reduced, and that very considerably too, by the present unfortunate state of the corn trade; but still the new channel opened by existing circumstances for its consumption in the meal trade must cause prices to remain high until the demand for barley for grinding becomes more limited.

The markets generally throughout Great Britain have been inadequately supplied with oats. Ireland for several years has largely contributed to these supplies; but the circumstances of the late crop have as yet caused the shipments made from thence to be much more limited than they have been for some years at the same period of the season. Under the protection of the corn laws, and with Great Britain as a constant consumer, the growth of oats in Ireland is annually increasing, and must continue to do so, to a far greater extent than can at present be well conceived. The quantity of oats produced there this season has been very considerably larger than

it has as yet been, but in consequence of the wet and unfavourable state of the weather, during the autumn, the quality of them is extremely various, and generally very few of them have as yet been brought into a condition fit for shipment. As the spring season, however, passes away, this defect will be, in some degree, remedied, and weekly hereafter must the Irish supplies of oats, in all the great British markets of consumption, be considerably increased. This article has met with a ready sale, a demand existing for it both for feeding and grinding, and the natural consequence has been a corresponding improvement in its value. The present unfavourable season places the great agricultural resources of Ireland in a very prominent point of view. The cultivators of the soil there have directed the principal part of their attention, as yet, to the growth of oats, and so successfully have they prosecuted their labours in this department that, notwithstanding the great injury which the last oat crop suffered from the inclemency of the weather, still no chance at present exists of foreign oats being admitted into consumption here at anything like a low duty. By proper encouragement, and by due protection to capital invested in Irish agriculture, a few years now can only pass before the same observations may be applied to wheat, and indeed to all other articles produced in Ireland, for the progress of the cultivation of all articles of agricultural produce is most rapid in that island, and great attention is now given to the growth of wheat in particular, which must be attended by most important and advantageous results to the best interests of the United Kingdom. To propose the sacrifice of agricultural improvement in Great Britain, and more particularly in Ireland, where there is such a wide field for the promotion of agricultural pursuits, to complaints of manufacturers, which are entirely groundless, is in every sense of the word ridiculous. In these undertakings capital is employed at least ten times greater than that employed in all departments of manufactures, and this immense sum would be nearly or entirely lost if these speculators in this new system of political economy should ever be able to accomplish the declared ends which they have in view.

The supplies of beans and peas in the London market during the last month have been large, and the quality generally has been of a superior description. From the same cause, which has improved the value of barley and of oats, the demand for pulse has been fully equal to the supply, and higher prices have been the necessary consequence. From the town of Birmingham and many of the inland corn markets, considerable orders have been executed for the account of the millers, who find them a profitable substitute, in many instances, for wheat. The growth of both peas and beans, however, last season was large, and the high prices which they at present command must naturally cause all the great markets in the United Kingdom to be plentifully supplied with them during the remainder of this corn season. No further observations can for the present be made respecting the future prospects of the agriculturist. The manufacturers may for a time be clamorous, but the Imperial Parliament will not needlessly sacrifice the Revenue, and the interests of the cultivators of the soil, who only require that extent of protection in our own markets against foreign produce which manufacturers themselves receive.

CURRENCY PER IMPERIAL MEASURE.

	Per Qr.	Per Qr.
WHEAT, Essex & Kent .red..	74 78	white 72 76 84
Suffolk & Norfolk , ,	70 76	do... 74 80
Irish.....	60 70	do... 70 72
Old, red	78 80	do... 84 90
RYE	36 38	new... 36 40
BARLEY, Grinding 36 38	40 42	Chevalier 42 43
Irish	30 35	Bere ... 29 30
MALT, Suffolk & Norfolk	56 62	Brown .. 56 58
Kingston & Ware	62 64	pale ship 62 64
OATS, Yorkshire & Lincolnsh, feed	26 28	Potatoes 30 31
Youghall & Cork black ..	27 28	Cork, white 28 29
Dublin.....	27 28	Westport 28 29
Clonmel.....	29 30	Limerick 28 30
Londonderry	29 30	Sligo. .. 28 29
Newry	30 32	
Galway.....	26 27	
Waterford, white.....	27 28	Black.. 27 28
Scotch Feed	29 30	Potatoes 32 34
BEANS	38 40	Small .. 42 45
PEAS, Grey.....	— 42	maple.. 43 44
White	46 48	boilers.. 52 54
SEED, Rape	32 36	Irish 25/ per last
English Red Clover, fine.....	64 70	80s per cwt
White	58 68	74s
Mustard, White, 12s 14s..	brown 21s 22s	per bushl.
Tares..32 36.....	old 30 37..	new 60 —s per qr.
FLOUR, Town-made	65 70..	Suffolk ..60 62 per sk of
Stockton & Norfolk 60 62..	Irish fines—	62 280 lb
	Superfine.—	64

Foreign Grain and Flour in Bond.

WHEAT, Dantzic.....	68 70
Hamburg	64 68
BARLEY.....	26 24
OATS.....Potatoes	18 21 feed 14 to 18
BEANS	25 —
PEAS	22 26
FLOUR, American.....per bbl.	34 38

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES	AVERAGES from the
by the Imp. Quarter,	corresponding Gazette
from the Gazette, of	in the last year, Friday
Friday last, Dec. 21,	Dec. 22, 1837.
1838.	

	s. d.		s. d.
WHEAT	78 4	WHEAT	53 2
BARLEY.....	36 2	BARLEY.....	29 3
OATS.....	25 5	OATS.....	20 5
RYE	48 8	RYE.....	28 0
BEANS	41 10	BEANS	34 5
PEAS.....	43 9	PEAS.....	33 10

IMPERIAL AVERAGES.

	Wheat.	Barley	Oats	Rye	Beans	Peas.
Week ending						
9th ..	72 11	33 6	23 1 38 11	40 2	42 11	
16th ..	73 10	34 3	23 8 39 3	41 0	42 8	
23rd ..	73 4	34 1	24 1 41 0	40 2	43 0	
30th ..	73 1	33 7	24 3 42 5	40 11	44 0	
Dec. 7th ..	75 6	34 5	25 1 43 9	40 6	44 5	
14th ..	78 4	36 2	25 5 48 8	41 10	43 9	
Aggregate Average of the six weeks which regulates the duty.....	74 6	34 4	24 3 42 4	40 9	43 6	
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the Mail of that day from London.....	1 0	10 10	10 9	6 6	9 6	5 0
Do. on grain from British possessions out of Europe....	0 6	2 6	2 6	3 0	3 0	0 0
Foreign Flour, 4s. 0d. per 196lbs. British Possessions, do. 3½d. per 196lbs.						

SEED MARKET.

DEC. 24.

The arrivals of English Cloverseed continue exceedingly scanty, and the few small lots of red that have hitherto appeared have been readily taken off by the dealers at full prices. To-day very little business was

done, and the value of both English and Foreign remained about the same as last week. There were a few orders from the North of England and Ireland, but the limits appeared to be too low to allow of their execution. White Clover does not meet with much attention, and our quotations can only be regarded as nominal at present. Trefoil quite as dear. The recent advance in the prices of Linseed has been firmly supported. Rapeseed was also quite as high. Canary seed dull, and rather cheaper. Coriander and Caraway of fine quality the turn dearer; other kinds of seed unaltered in value.

CLOVER English, red.....	75	90	white	50	75	per cwt.
superfine.—	83					
Dutch	—			—	—	
German.....	—			—	—	
French	—	60	super.	75	in bond	
American	—			—	—	
Trefoil.....				14	28	
Rapeseed, English	£34	£36	foreign	£28	£30	per last.
Linseed, English sowing..	—			—	—	per qr
Baltic ..	—		crushing	47	49	
Mediterr. & Odessa—	—			46	50	
Hempseed, small ..	34	36	large	38	42	
Coriander, new.....	13	18	fine	18	22	per cwt.
Mustard, brown.....	15	18	white	10	14	per bushel
new	18	22		12	15	
Turnip Seed, new Swedes	20	21	other sts.	28	36	
Rye Grass, English	30	54	Scotch	18	42	
Tares, Winter	5s	0d	to 0s	0d		
Canary, new	80	84				
Caraway.....	—			42	46	extra 47

PRICES OF HOPS.

BOROUGH, Dec. 24.

For all fine Hops we have a good demand at rather higher rates; the market has again assumed a firm appearance, and the expectation is that Hops will realise more money immediately after Christmas, as it is well known the majority of the bulk left for sale are so inferior, that fine parcels will command high rates.

PRESENT PRICES.

	£ s. d.	£ s. d.	£ s. d.
East Kent pockets.....	4 10 0	to 5 12 0	fine 8 8
Bags	4 4 0	— 5 5 0	do. 7 7
Mid Kent pockets.....	3 15 0	— 4 10 0	do. 8 8
Bags	4 0 0	— 4 10 0	do. 7 7
Weald of Kent pockets....	3 10 0	— 4 10 0	do. 5 5
Sussex do.	3 3 0	— 4 4 0	do. 4 10
Yearlings do.....	2 10 0	— 3 3 0	do. 4 4
1836 Pockets and Bags....	2 2 0	— 2 10 0	do. 3 3
Old olds.....	1 1 0	— 1 10 0	do. 2 2

POTATO MARKET.

SOUTHWARK WATER-SIDE, DEC. 24.

We have again to report during the past week a liberal supply of Potatoes to the Water-side; the wind being still favorable for the arrival of vessels from the different coasts, has brought a supply into the London market amounting to 3,111 tons, of which the following is a statement—From Yorkshire, 828; Scotland, 627; Devon, 504; Jersey, 455; Wisbech, 33; Kent, Essex, Suffolk, 664; being altogether 255 tons more than the receipts of last week. The above supply induces the buyers to hang back from purchasing freely, consequently the trade has not been so brisk within the last few days, and the weather being milder operates against sales.

PRICES:—

Per ton.	Per Ton.
York Kidneys	100s.
Jersey Whites	80s.
Reds	90s.
Wisbech Blues	80s.
American Natives	85s.
Do. Red	85s.
Scotch Red	85s.
Kent Kidneys	90s.
Devons	85s.
Kent, Essex, and Suffolk Whites ..	75s. to 85s.
Jersey and Guernsey Blues	80s.

WOOL MARKETS.

BRITISH.

DEC. 24.

The quantity of business transacted during the last week has been less, on account of the difficulty which

has been experienced in getting Wool off, and also of the near approach of Christmas. The state of the trade generally, however, is sound, and at present no very gloomy apprehensions of a falling off of its briskness are entertained, although at the present high prices the possibility of a brisk demand is not so easily to be demonstrated, when it is considered that the high prices of provisions must lessen the demand for goods among the poorer classes of society. No alteration has taken place in the prices last quoted.

	DECEMBER 1.	JANUARY 1.
Per lb.	s. d.	s. d.
Down Teds.....	1 7½ to 1 8	1 7½ to 1 8
Half-bred Hogs	1 7½ 1 8	1 8 1 8½
Ewes and Wethers	1 4 1 5	1 4½ 1 5½
Blanket Wool	0 7 0 11	0 8 1 1
Flannel do.....	1 1 1 5	1 1½ 1 5½
Skin Combing	1 2 1 4	1 2 1 4

LIVERPOOL.

Scotch, Dec. 22.—The business done in Scotch wool this week has been limited, owing to the stocks being extremely light. Prices, though firm, are still unvaried as will be seen by our quotations.

Per Stone of 24lbs.	s. d.	s. d.
Laid Highland Wool, from	12 6 to 13 0	
White do. do. (scarce)....	14 9 15 0	
Laid Crossed do.	14 6 15 6	
Washed do. do.....	16 0 17 0	
Laid Cheviot, do.	17 6 18 0	
Washed do. do.....	22 6 24 6	
White do. do.....	34 0 36 0	
Import this week	166 bags.	
Previously this year	17323 do.	

Total..... 17489

The business transacted in Foreign Wool since Saturday last was tolerably extensive, and the market has had a very steady tone. Prices generally have a tendency to improve, and for the sales of this week full prices were realized. Arrived this week 62 bales; previously this year 46,771 bales. Total 46,833.

FOREIGN.

DEC. 24.

The result of the last public sales has been in every respect satisfactory to the sellers of the wool, as the advance obtained at the sales which immediately preceded them was established. About 2,000 bales have arrived in the course of the week ending to-day from various parts.

Electoral Saxony wool, from 4s. 6d. to 5s. 4d.; first Austrian, Bohemian, and other German wools, 3s. 6d. to 4s. 4d.; second do., 2s. 4d. to 3s. 2d.; inferior do. in locks and pieces, 2s. to 2s. 6d.; German lamb's do., 2s. 2d. to 3s. 3d.; Hungarian sheep's do., 2s. 4d. to 3s. 2d.; Leonese sheep's do., 2s. 6d. to 3s. 2d.; Segovia do., 1s. 10d. to 3s. 2d.; Soria do., 2s. 2d. to 3s. 4d.; Caceres do., 2s. 4d. to 3s. 2d.; Spanish lamb's do., 1s. 8d. to 2s. 8d.; German and Spanish cross do., 2s. 2d. to 3s. 4d.; Portugal sheep's do., 2s. 2d. to 3s. 3d.; do. lamb's ditto, 1s. 6d. to 2s. 8d.; Australian, fine crossed do., 2s. 2d. to 3s. 7d.; do. native sheep's do., 1s. 6d. to 2s. 8d.; Van Diemen's Land, native sheep's do., 1s. to 2s. 4d.; and Cape of Good Hope do., 1s. 4d. to 3s. per lb.

Wool on which the Home Consumption Duties have been paid at London, Liverpool Bristol, and Hull, during the last week:—

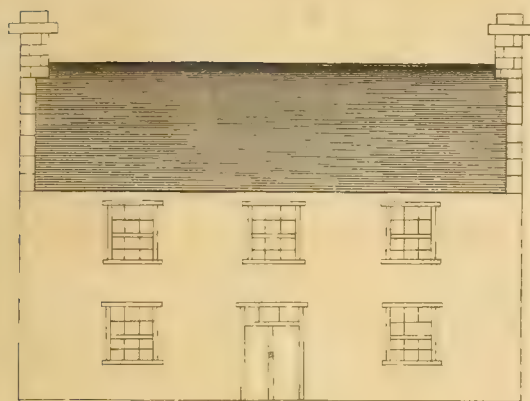
WOOL.	This Year, previous to last week.	Same time in the last Year.
Spanish, London	1b. 2018727	1575211
Australian, do.....	1b. 10717969	9225696
Other Sorts, do.....	1b. 15139987	13067785
Liverpool	1b. 9954828	—
Bristol	1b. 5402	—
Hull.....	1b. 18349948	11339901

LEVELLING HOUSE & CO.

designed for Farms, from

100 to 400 Acres.

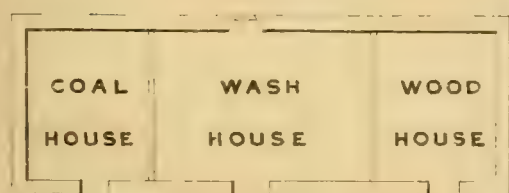
Estimate £300



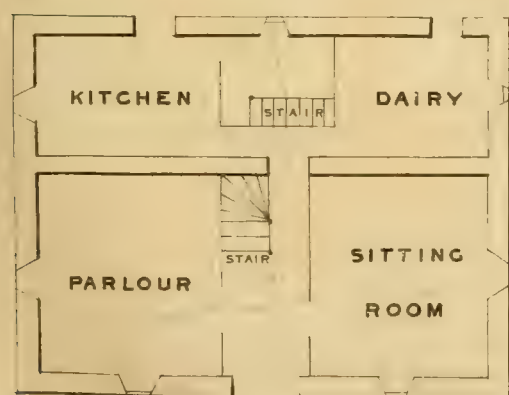
FRONT ELEVATION



SECOND FLOOR



BACK AREA



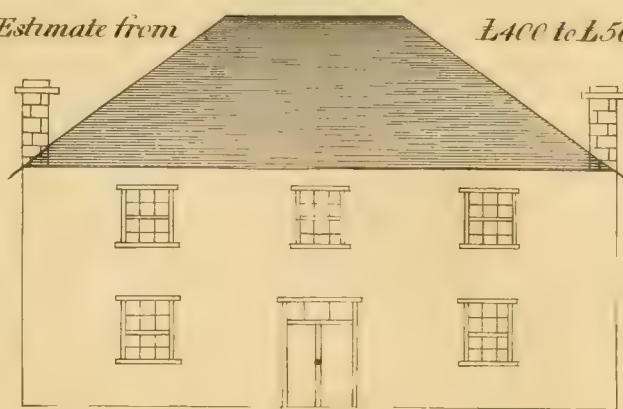
GROUND FLOOR

LEVELLING HOUSE & CO.

from 400 to 1000 Acres.

Estimate from

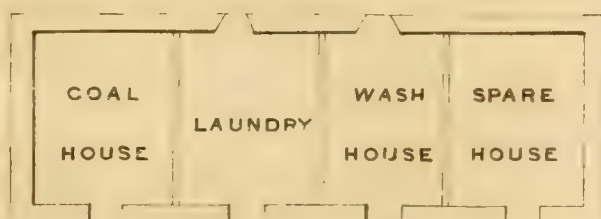
£400 to £500



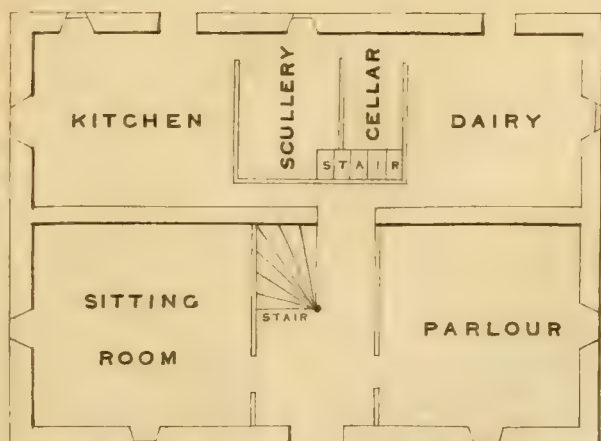
FRONT ELEVATION



SECOND FLOOR



BACK AREA



GROUND FLOOR



THE FARMER'S MAGAZINE.

FEBRUARY, 1839.

No. 2.—VOL. II.]

[NEW SERIES.

THE PLATE.

The subject of our first plate is a Short-horn Ox, bred by Sir C. Knightley, Bart., M. P. for Northamptonshire. This animal formed one of a lot sent to the Smithfield Christmas Market, the whole of which excited universal admiration: it being fully admitted that so complete a lot had never been sent to that market at one time by any single breeder. It would be waste of words in us to offer any commendation of the ox in question. The painter, Mr. W. H. Davies of Chelsea, and the engraver, Mr. Beckwith, have done credit to themselves in the execution of the plate. The picture is a perfect representation of the animal, and as such we leave it to the criticism of our readers. We regret that we have not been enabled to obtain any particulars respecting his pedigree, &c. &c.

ON THE SELECTION OF GRAIN SEEDS, ROOTS, &c.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—I shall again refer to the objections which you bring forward against the practicability of an experimental farm, before I proceed to finish my observations on the utility of such an establishment for testing and purifying our seeds and roots.

In advocating the advantages of an experimental farm, we are at all times happy to receive any suggestions which individuals may throw out, in furtherance of the scheme; nor are we ignorant of the many obstacles which require to be surmounted, before such an establishment can be properly matured. You must not however suppose that in our coinciding with your remarks with regard to the necessity of having committees appointed in different districts, for the purpose of embracing every kind of soil, and climate, &c. and the inadequacy of a single establishment for this object, that this was a new idea, or that we had not previously considered the objection.

OLD SERIES.]

tion. On the contrary, and in proof that we had not overlooked this circumstance, we would refer to a pamphlet entitled, "Observations on the advantages of an Experimental Farm,"—published in 1836, Longman & Co;—wherein will be found the following paragraph: "It has been objected by some, that no single establishment could be made applicable to the variety of soils, climates, &c. of Scotland; this objection however may be completely obviated, by attending to what may be termed the working machinery of an Experimental Farm, as fully detailed in the original suggestions. It is there stated that a connected line of communication, by means of lateral branches in every county, is essentially necessary to the success, and, indeed, forms part of the scheme; and we would here further suggest that the ground set apart for experiment by these local associations, and the different museums in connection with them, should be entrusted to the management of an experienced nurseryman or gardener. We have no doubt that many among this numerous and intelligent class might be found, both competent and willing to undertake the task, more especially as the details they would be called

H

[No. 2.—VOL. X.

upon to superintend, are so intimately connected with the subject matter of their own profession; and if so, their scientific attainments which have been hitherto confined to a comparatively circumscribed sphere, would be brought to bear upon the rural economy of the country, and the co-operation of individuals would be secured, who would be every way qualified both to act as a check and an assistance to the parent establishment—as a check, by testing and verifying the report of the chief manager—as an assistance, by furnishing accurate and scientific statements of the several matters entrusted to their care. It will thus appear that we had not overlooked the necessity of these committees, this circumstance, therefore, requires no further comment. We observe that you still believe that it would be difficult to obtain a person with sufficient talent for the management of such an establishment. We are sorry that you should form so poor an opinion of the knowledge of agriculturists, and although we admit that much ignorance and prejudice prevails amongst them, we yet repeat that we are sufficiently satisfied with regard to the abilities of our Scotch agriculturists, to believe that many individuals are to be found possessed of sufficient knowledge, talent, and enterprise, as to place beyond dispute their capabilities for the successful superintendence of such a charge. And we still adhere to our former opinion, that however necessary science may be to the full development of certain agricultural operations, that strict attention, skill, and observation will be found quite sufficient for obtaining a practical knowledge of the different experiments instituted. In confirmation of this opinion we would refer to an experiment exemplified in practice by Col. Le Couteur, which drew forth the following exclamation from Professor Le Gasca,—‘Is it possible, that in one twelvemonth, you have practically obtained the knowledge of what I have been for five and twenty years studying botanically?’”

We will not at present, however, enter more at large into this discussion, for you must bear in mind that we proposed at the commencement of these letters, to shew the share which we believed the Highland, and Agricultural Society of Scotland, and the local Agricultural Associations, have had in improving the agriculture of this country, and in order to do this more effectually, we have attempted to trace the progress of agricultural improvement, and give the merit to those who have been the means of introducing new and beneficial ameliorations. We have also, so far as our limited information would admit, examined into the present state of our rural economy, and endeavoured to point out the means which we believe might be adopted for its improvement, in preference to those which have hitherto obtained the attention of the agricultural community. We do not however intend to blink the objections which have been brought forward against the Institution, but would submit whether this subject may not be discussed with greater advantage after we have exhausted our observations on seeds and roots, the cultivation of the soil, &c., as formerly contemplated, and we shall then be prepared to enter fully into the merits of our Experimental Farm, and the benefits which might be expected to be derived from it. In the mean time we shall proceed with the subject of seeds and roots, in continuation of our letter of 12th November last, and endeavour to point out the advantages that would result from a proper selection and purification of the different varieties, and the benefits which would be derived from a judicious and frequent change of seeds and

plants from one district to another. What we stated with regard to the necessity of selecting, purifying, and classifying the different varieties of wheat, will equally apply to all the tribe of cereal grains. We may however observe in reference to our remarks on the probability of a change of seed wheat from the continent proving beneficial to England, that we have since ascertained that the variety of wheat called White Dantzic, has been successfully matured in Kent, for a number of seasons, and has been found to answer very well. It thus appears in accordance with the supposition contained in our letter of 10th December, that were proper means adopted, our choice of a change of seed grain might be very much extended.

In Lawson's Manual of Agriculture, twenty varieties of barley are particularized, but we may observe in relation to those grown in Scotland, there are perhaps no other kinds of grain which has received less attention from agriculturists, whether as regards the selection of most prolific ears, characterising the different varieties, or proving the susceptibility of improvement of this grain by making favourable changes from one district to another. The common big or rough barley has been cultivated for a lengthened period chiefly in the Highlands of Scotland, and on the Lowlands, on exposed inferior light soils. The common sorts, however, in cultivation on the more congenial soils, are the two-rowed or long-eared barley, commonly called the Old Scotch. The common two-rowed or English barley, and latterly the Chevalier, Annat Dunlop, Stains, and Golden or Italian Barley. The Annat barley was introduced by Mr. Gorrie, at Annat Gardens, (hence its name) and is the produce of two ears picked on the farm of Flawcraig, Carse of Gowrie, in 1830. The ears of the Dunlop barley are in size and shape similar to those of the old Scotch, but both straw and grain are a good deal darker in colour. It is however about a week earlier than the common barley, and therefore may be preferred for growing on late situations.

Stains barley was sent from London by Lord Lyndoch, to his land steward, Mr. Stain Dalcree, Perthshire, and is now known in that neighbourhood under the above name. Though superior in sample to the old Scotch, yet it is late in ripening, and therefore may prove unsuitable for this climate. The Golden barley was first introduced into Stirlingshire by Mr. Smith, of the Deanston works, and is now pretty extensively cultivated in that neighbourhood. Under the name of Italian barley, it was introduced some years ago into Ayrshire from the Alps of Europe, and hence it is sometimes called Alpine barley. The ear is shorter than the common barley, but remarkably close, broad, and compact. The grains are also large, plump, and of a bright yellowish colour. It seems upon the whole a rather superior quality, and deserving of cultivation. The two former of these however, the old Scotch and the common two-rowed English barley, have been cultivated largely for a considerable period, but they have now got so mixed together, as well as with other varieties, that it is difficult to distinguish the one from the other, or to characterize either of them. However anxious, therefore, agriculturists may be to obtain any of these varieties pure and unmixed, it is now almost impossible for them to accomplish this, owing to the neglect of selection, and of allowing the different sorts to intermingle to such an extent with one another. This is the more to be regretted, for farmers of late years have shown a strong desire to obtain pure and unmixed sorts, and have thus been induced to try

new varieties, which in many varieties have neither proved congenial to their soil or climate.

We have already alluded to the peculiarity of certain districts being possessed of particular properties for maturing certain varieties of grain in greater perfection than that of others, and it must be acknowledged, that our knowledge regarding this matter is still limited and circumscribed, and that hitherto too little attention has been directed to so important a subject. For it must be apparent to every agriculturist, that there are certain districts which are more applicable for producing and maintaining the qualities of barley than others, and although this kind of grain is perhaps more susceptible of an unsuitable situation than any other; yet we know of one variety, the old Scotch, having been grown in one district for the period of fifty years, without the seed having ever been changed or the quality of the grain sensibly deteriorated; and we would here observe that the Scotch brewers esteem this variety for malting, when they can obtain it pure and unmixed. There are other districts, however, completely void of the quality of preservation, for if barley, no matter of what description, be grown, its form, colour, and general appearance will be so altered even in one season, that its former character will not be recognisable. Now we believe barley to have a similar tendency to wheat, that is, it is a native of a warmer clime than our own, and therefore if we would improve its quality and preserve its purity and productiveness, we must have recourse to some of those districts in England, where it is matured in greater perfection than in this country. It is not enough, however, as we before stated in regard to the change of seed wheat, that we receive our seed barley from England. Those districts in England most suitable for a change to the different districts of this country, must first be proved, and every peculiarity connected with either district carefully noted, as also the properties of the different grain correctly ascertained, whether for coming early to maturity, or any other quality, before the change can be of general benefit: for there cannot be a doubt, had these circumstances been more attended to by those interested to procure English seed grain for the Scotch farmer, that much loss and disappointment would have been avoided.

The lateness which any variety of English barley may possess is in a great measure counteracted by superiority of the climate, but should the same variety be brought to Scotland this circumstance proves fatal to its success. We have an instance of this in the Chevalier variety, for however valuable it may prove to the English farmer, yet its lateness and slow tendency to ripen render it unsuitable for many districts in Scotland. To obviate this inconvenience attending the English varieties of barley, we would recommend the selection of the most choice ears from among that variety which had for a series of years proved to be of a useful description in Scotland. The advantage of this mode of procedure is well exemplified in the experience of Colonel Le Couteur with wheat. He states that the only chances of having pure sorts, was to raise them from single grains or single ears, and that the selections which he made amply rewarded his labour, as the produce of his crops was increased from an average of about 23 or 25 bushels an acre to about 34, and since he raised wheat from single ears, or carefully selected sorts, he has increased his crops to between 40 and 50 bushels per acre. To improve the quality however, of these selected ears, we would recommend to be sown in some characterized district in England and again returned to Scotland for seed. If this

system was judiciously persevered in, we have no doubt but that the original properties of the variety might be preserved, and productiveness of it by such means increased, and at the same time the quality and tendency to early maturity materially improved.

It may indeed be thought by those who have not turned their attention to the propagation of new varieties, that it would take a considerable time before any new sort could be made generally available to the agricultural community; but the easy facility of propagating new and genuine seeds will become manifest from an experiment instituted by a practical agriculturist in East Lothian. The ears of a single plant of wheat were preserved, and the grains dibbled into the ground the same autumn, and the produce of the second and third seasons sown broadcast in the ordinary way, and the fourth harvest put him in possession of nearly 40 quarters of sound grain. By this it will be observed that any new variety would speedily be made available to the whole agricultural community, and that the progress of improvement would be as rapid as the most sanguine could desire. We would not at present, however, enter into this matter, but will in the next place direct our attention to the oat.

In Lawson's Manual of Agriculture, the different varieties of oats enumerated are thirty-eight, and these have, with few exceptions, been more or less cultivated in Scotland, according to the estimation in which the various sorts are held by agriculturists.

The Potato oat was discovered growing in a field of potatoes (hence its name) in Cumberland, in 1788. This variety has received a more extensive cultivation in this country than perhaps any other, but when cultivated too long in one situation without a change of seed, the quality very soon deteriorates. The Hopetoun oat was discovered by accident some years since, by Mr. Sheriff Mungoswells, East Lothian. Its cultivation has extended rapidly throughout the different districts, during the last five or six years, and is found to be well adapted for certain soils and situations. These however are but imperfectly understood, owing to the want of a general communication being established throughout the country; and many years must elapse before this knowledge is accurately acquired. The common Dun oat, although somewhat later than the former, is a very prolific sort, and is well adapted for certain soils and situations, and is perhaps more deserving of cultivation than any other of the coloured varieties. It was much grown in the higher districts of the Lothians and neighbouring districts, as about the Lammermuir and Pentland Hills, and is still cultivated to a certain extent. The quality of this oat, however, when grown for a few years in particular districts, invariably inclines to degenerate and get mixed, and many of the ears become affected with smut. Therefore where it was once extensively cultivated, it has now given way to other varieties less valuable in themselves, but not so liable to this disease. There appears however to have been no effectual means used to preserve the quality of the Dun oat, for had this been the case, we do not see but what its quality and productiveness might have been as easily preserved as other sorts, and with regard to the smutty or blackened ears, this might perhaps be remedied by subjecting the grain to a similar process as pickling wheat. Farmers however, seldom inquire into the nature of those tendencies to which certain varieties of plants are subject, but uniformly throw them aside when they do not come up to their expectations. The Black Tartarian oat is another variety which merits the atten-

tion of the farmer. It has been cultivated in some parts of England for a considerable period, but its introduction into Scotland has been comparatively recent; enough however has been learnt to prove its productiveness and adaptation to certain soils. We are aware indeed of the crop of this oat having in some instances produced at the rate of twenty hundred weight of excellent meal per imperial acre. Like all the other varieties, however, it also speedily degenerates and gets unproductive. The Early Angus oat is nearly as early as the potato oat. It is much cultivated in the district of Angus, and northward in some parts of the Highlands; also in some parts of Scotland, but particularly in the late and exposed districts. The Late Angus oat is a well known and superior variety, much cultivated particularly in the central districts of Scotland, in some parts of which it is termed common oat, or common late oat. The Georgian oat was introduced about thirteen years since by Captain Barclay, of Ury, an enterprising agriculturist, to whom the farmers in the northern counties are much indebted for many valuable ameliorations in their cattle stocks. Through Capt. B.'s exertions, this oat in a short time obtained a very extended cultivation, but a few seasons determined that it was not possessed of the requisite qualities for either the generality of our soils or climate; and it was ultimately proved to be decidedly inferior to many of the varieties then in cultivation, thereby showing the degree of dependence to be placed in any new variety until it has been rigorously subjected in several districts to the test of experiment. The Blainsley is another variety of it, which is the common oat of the southern districts of Scotland, and is extensively cultivated there. It acquires its name from being first raised at Blainsley. The Sandy oat is of more recent introduction than any of the above enumerated varieties. Like all the others it was discovered by accident, and although it is well recommended, yet the proofs are local, and we cannot say that it will prove generally useful until more is learnt of its nature and habits.

We might enumerate many other varieties of oats which receive the attention of agriculturists in different districts in Scotland, but they are so ill assorted and have got so mixed, that it is difficult to give them any distinct character. We would however remark, that while the climate of England seems better suited to the growth of wheat and barley than Scotland, yet that the latter country must be acknowledged to be capable of producing oats in greater perfection and of a superior quality to the former, thereby showing that this grain is more congenial to a moist climate than any other of the cereal kind. The system of an exchange of seed between the two countries will in this case be reversed, and we conceive that a frequent and judicious change of oats from Scotland would prove very advantageous to the English agriculturists.

We have already alluded to particular districts in England being more particularly adapted for maturing wheat and barley for seed than others, and this view of the matter is equally applicable to the necessity of ascertaining those districts in Scotland, most fitted for perfecting the oat, and rendering it suitable to the different soils and situations in England. Our knowledge however, of the different districts and their suitableness or otherwise for maturing seed oats for a change to other districts is but limited, and we do not hesitate to affirm that this important subject will never be properly understood, until some centre of communication is established. For it must not be supposed that a district,

although famed for raising a particular kind of oat for seed, is equally applicable for producing all the varieties in the same perfection. That some districts however are better adapted for this purpose than others, does not admit of a doubt; and we have an instance in the south eastern part of Scotland, about Lander Hall, and Peebleshire, where oats are produced of a superior description for seed, and prove a valuable change to several other districts in Scotland.

From the foregoing remarks it will be observed, that the different varieties of wheat, barley, and oats are much mixed in this country, and that every oat might be rendered more productive, were some system established for the purpose of selecting and purifying the different varieties. It will not be denied that a mixed variety of grain, whether of wheat, barley, or oats, can never ripen equally; neither can it be supposed to produce either that quantity or quality of flour or meal, which a pure and unmixed description is capable of. This fact has been well exemplified by practical experiments, instituted by Col. Le Conteur on several varieties of wheat. By testing the different sorts, and selecting ears from the most valuable, he has been enabled in the short period of five years, to raise more than twice as much wheat per acre than he formerly did when using the mixed and common sorts sown in England; and the samples which he now produces at Mark Lane, are not equalled by any other, whether of home or foreign growth; and what is more remarkable, some of these wheats yield about twelve per cent. more fine flour than the common runs in England. This improvement Col. Le Conteur ascribes solely to the selection of the seed, and we are sorry that his attention has not been also directed to the other sorts of grain, as we believe the like means would have produced a similar effect with regard to them.

In speaking of the advantages to be derived from these changes of seed betwixt England and Scotland, we have made no allusion to Ireland, as our experience with regard to the nature and capabilities of that country is limited. We however believe that the system would also prove beneficial there, and that the intercourse between the three countries might become of mutual advantage.

The Bean and Pea will next merit our attention. The common Scotch or Horse bean is almost the only sort cultivated in Scotland, although there are many other varieties to which attention is sometimes directed. The bean culture however, in this country has rather retrograded than extended; and in many districts has been thrown aside nearly altogether. This no doubt proceeds from the texture of many soils being so altered by cultivation, as to allow a greater extension of the potato and turnip husbandry, but it is also owing to the uncertainty and lateness which generally attends this crop in this climate. Were this not the case, it would prove a valuable acquisition to those districts where the four years' rotation system is followed, as it would be the means of extending the distance between some of those crops of which the soil gets as it were sick, such as turnips and clover, and which do not succeed when the crop is too closely repeated on the same ground.

There is perhaps no other grain over the shape and colour of which, the climate, soil, and culture has so much influence as in the case of the bean: but we are satisfied were an early variety procured, this branch of husbandry would speedily extend itself in those districts in Scotland which are too heavy for growing to advantage potatoes and tur-

nips, and also on those which required a change to prevent a too close repetition of the same kind of crop. Were attention therefore directed to this subject, and proper means used to select and test the different varieties, we have no doubt but that a sort might be procured combining earliness and prolificness; nor would this be a matter of great difficulty, for if we look at the great diversity of appearance in the samples of common beans, we may readily conclude that this is more owing to a mixture of varieties, than to any other cause. That such a mixture exists, any person may perceive by examining a field of beans in full flower, when they will be seen to present an infinite diversity in the colour of the flowers; and although this may not and does not always precede a different colour or form in the seed, yet it doubtless constitutes a variety, and therefore the seeds are more likely to vary than if the flowers were all the same. It is well known that a bean crop is an excellent preparative for either wheat or barley, according to the nature of the soil; but it is more particularly valuable for the former on those strong clay soils, where the potato and turnip husbandry cannot be prosecuted successfully. It would therefore be a matter of the greatest importance to the agricultural community, to have the different varieties tested, and a selection made suitable to the soils of the different districts.

To obtain such a desirable end it will no doubt be necessary to have some field of experiment, where the minutiae attending these selections could be preserved, independent of the whim and caprice of individual interference; but when this is accomplished, it will also be necessary to have a regular system of exchange of seed matured, for we consider this to be more necessary to the successful cultivation of the bean, than perhaps any other sort of grain. The change of seed from England always proves beneficial, and more so the first season than afterwards; but unless the change is persevered in, the variety will speedily degenerate, and prove worse than those sorts which may be said more properly to belong to Scotland.

That much might be accomplished by such means we have only to turn in proof of what we say, to the progress which has been made by horticulturists in the improvement of the pea, a variety of which with suitable properties for field culture, the agriculturist is as deficient of as in that of the bean. The early Charlton is the oldest, most extensively cultivated, and best known variety of white pea, and is said by some to be the origin from which the most esteemed early garden varieties have arisen, and that they are nothing else than Charlton peas considerably modified in character, from the effects of cultivation, selection, &c. Although this idea may seem far-fetched, yet it does not at all seem improbable, especially when we take into consideration the susceptibility of change, from cultivation and other causes, which the pea is ascertained to possess. Thus the early Charlton, or any other variety whatever, if sown for several years, and only the very earliest and very latest plants selected for seed each season, the difference in the time of ripening between the two will ultimately become so great as to give them the appearance of two distinct varieties; and by sowing the earlier portion on light early soils, and the latter on strong black or coarse soils, the difference will become materially increased. It is therefore probable that the Early Frame may have originated in the Charlton, although they differ essentially in their habit of growth. We thus perceive when attention is judiciously directed to any object, how easy is the march of improvement; but it cer-

tainly militates not only against the profits of the agriculturist, but against his character for enterprise and perseverance, that he should allow the gardener so far to outstrip him in every particular, whether as regards the cultivation of the soil, or the quality and abundance of the produce. It has been objected to the institution of experiments, that they will be attended with great expense; but if we look to the benefits which would accrue to agriculturists and the community at large, from having every subject connected with agriculture properly defined and understood, we may safely rely on being speedily remunerated for any expense or outlay incurred; and it is a matter of little consequence whether we attain the object by direct or indirect means.

In directing attention in the next place to the Potato, we are aware that we are entering upon a subject that has of late years been often brought before the public. In Lawson's Agricultural Manual, there are upwards of one hundred and fifty varieties of the potato enumerated, and experience has proved that these different sorts are possessed of peculiar habits, such as early maturity, &c., and that some sorts are better adapted for certain districts and descriptions of soils than others. It must therefore be obvious, that to obtain a knowledge of the various habits and tendencies of the several varieties, and their adaptation for particular districts with various soils and variable climate, is beyond the power of individual exertion. The want of unity and the inefficacy of detached proceedings, was indeed exemplified in the failures which recently took place in almost every district in Scotland in the potato crop. We are aware that many ingenious theories were brought forward by several individuals, as to the cause of these failures, but none of them appeared to agree, either in the cause or the remedy; and indeed, the most of their reasoning has been completely overthrown by subsequent experience. We however do not hesitate to say, that had it not been for the extremely dry state of the ground, both at the period of planting and afterwards, in those three successive seasons when the disease was most prevalent, that it would never have appeared. Be this however as it may, we have no hesitation in affirming that there are certain districts in Scotland that have been proof against this disease, and which seem possessed of some inherent quality for preserving the property of the potato, and are thereby rendered valuable for producing superior seed. The district to which we allude is situated along the highest cultivated points on the north side of the Cleish Hills, in Kinrosshire, and in those seasons when the taint threatened the destruction of almost every field in many parts of the country, this district completely escaped the ravages of the disease. Not only so, but what was more remarkable and merits the attention of every agriculturist, the seed which was procured from this district, was not liable to the taint; for not only ourselves but all those who received their seed potatoes from it, had not a single failure in their crops, while most of the fields around were all more or less affected. We may refer to a report from another part of the country, which seems also to have been proof against this disease. "At Leadhills, in Lanarkshire, the highest inhabited district in Scotland, potatoes are grown to some extent, and, strange to say, no taint has ever appeared there; in consequence of this, the crop is now getting in great demand for seed, and has been sent for this purpose as far as Kelso, and also to Glasgow, a distance of forty-four miles." Such facts are of importance to the agricultural community, for the advantages to be derived from procuring seed potatoes

from similar situations, possessed of similar tendencies, is neither generally known nor understood. Had an experimental establishment, however, been in operation, those situations would have been ascertained and marked for future investigation, which had escaped the first year's ravages of the disease, and by the second season these would have been confirmed, and this would have placed beyond dispute the character of certain districts. But even supposing the potato crop was not again subjected to such a severe trial as these three seasons afforded, still there cannot be a doubt that even in ordinary seasons the advantages which the early dry lands would derive, from a change of seed from those situations will be found always to be considerable, though perhaps, unless by comparison, conspicuously so. We have only alluded to these two districts, as showing what may be done in this way, but have no doubt there are others which if known, would prove equally beneficial for a change; and we think there is nothing which more strongly proves the necessity and advantages of an institution of the nature we have been advocating, than those circumstances which we have brought forward. For it will be found that many of those diseases to which agricultural produce is sometimes subject, proceed often from some cause, trifling perhaps in itself, but rendered highly destructive in its consequences, from our having no data to guide us in our operations, nor any public institution to test and inquire into the different causes which from time to time affect our vegetable economy. Our knowledge, indeed, will continue to be limited and circumscribed, and prejudice and error allowed to reign triumphant, until the agricultural interest bind themselves together for the purpose of reducing those crude and ill-digested theories to practice, and simplifying the different processes which are necessary to the full development of the most simple agricultural operation.

A SCOTCH FARMER.

(To be continued.)

ON PLUG OR CLAY DRAINING.

BY W. S. EVANS, ESQ., OF SELKIRK HOUSE,
CHELTENHAM.

(From the Quarterly Journal of Agriculture.)

The advantages of draining lands subject to springs is well known, and has been ably described by Elkington and others in various works on agriculture; but, as far as I am acquainted with these descriptions, they are chiefly confined to the best means of draining peaty and boggy soils, and such as are infested with deep-seated or more superficial springs. But there is a description of land of great importance as composing a very large portion of the soils of this country, which comes under neither of these denominations, and which has been almost wholly neglected, as the means hitherto recommended for its improvement have been either so expensive on the one hand, or inefficient in their effects on the other, as to preclude any advantages from their use. This land is capable of yielding remunerating returns when judiciously drained and under a good system of management; but without draining or skillful culture, this kind of soil is the most destructive of the capital of the farmer of any land in these king-

doms. The land now alluded to is chiefly composed of various depths, or of uncertain depth of vegetable soil of the superstratum or surface, which is incumbent on a subsoil of tenacious clay, exceedingly retentive of water, and rendered dry chiefly by evaporation. Gravelly and sandy soils, with ribs or beds of clay intersecting in various and uncertain directions, are of no value without draining in a humid atmosphere like ours, and they set at defiance the best systems of farming. It becomes, then, a consideration of the first importance to the landlord and farmer, as well as the public, to devise means by which such land can be brought into profitable cultivation at a moderate expense, and to make these means as extensively known as possible. Plug-draining may be relied upon to effect this purpose, and at an expense so trifling in amount, in comparison with the advantages to be derived from its use, as will induce every landlord who may possess lands of the description in question, to apply a portion of his rents annually to this purpose. The farmer, under a rack-rent in the present depressed state of agriculture, cannot be expected, even if he has the means, to expend his capital in making permanent improvements on another man's estate. Draining should be done at the landlord's expense, beginning first with the arable land, and proceeding to the pasture-land, until the whole estate is completed. Should the landlord require a word of comfort or encouragement to prevail upon him to begin this experiment, I can assure him, that in numerous instances within my own knowledge, where the tenant has had his rent reduced, and has been soliciting a farther reduction, the landlord has been advised to put a value upon his estate according with the times; and any farther reduction that may be found necessary, the amount thereof is employed in paying the interest of the capital which the landlord expends in draining the land of the estate; and the results have been greatly to the satisfaction and advantage of both landlord and tenant.

It is usual to see good crops of corn, or the superior grasses, growing on the tops of the ridges upon this species of soil, and the furrows entirely denuded of every kind of vegetation, except surface-weeds and couch-grass; but, when furrow-drained, and the height of the ridges more or less reduced, the best corn and grasses are found in the furrows. If a calculation were made of the crops lost in the furrows, it would be found that the increased quantity and improved quality of the crops would more than repay the whole expense of draining in two years, and leave the land in a permanent state of amelioration and improved value.

It is not sufficient to describe superficially any plan or practice in husbandry which is introduced to instruct a class of men who, generally speaking, have not had leisure and the means to fit them to investigate and appreciate the advantages and disadvantages of any new practice, by a mere general description. It must be placed before them in the plainest and clearest manner, because farmers are too prone to abandon, upon the first obstacle that comes in their way, the greatest advantages, rather than by perseverance to overcome difficulties. I have therefore given sketches, and a description of the different implements which are used in completing this process of draining, models of which I shall have the pleasure to transmit for the inspection of the Highland Society of Scotland on the first convenient opportunity. These implements will be found to perform their work most efficiently if properly applied.

Fig. 1.

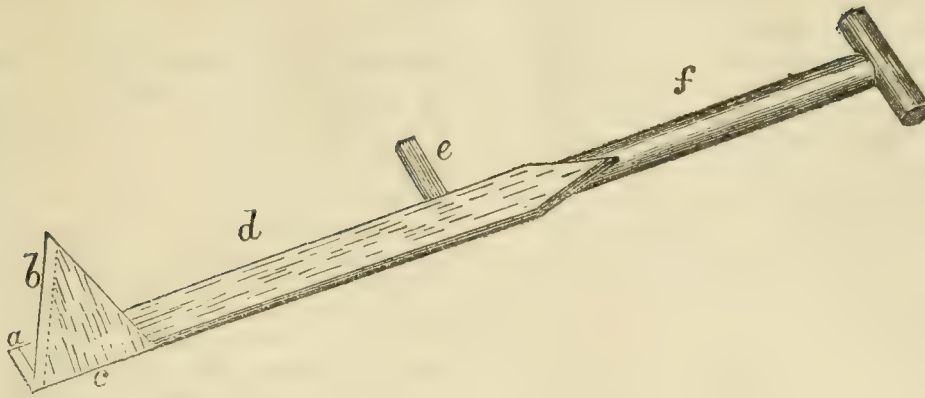


Fig. 1. is the bit or grafting iron ; *a* the width of the bottom $1\frac{3}{4}$ inch ; *b* the side-bit, length of cut 6 inches ; *c* the width of the back of the side-bit, worked out of the main-bit, which must be of the best tempered steel, $4\frac{1}{2}$ inches ; *d* the length of the main-bit from the step to the bottom, 1 foot 6 inches ; *e* the treading step ; and *f* the handle, which is about the length of a common spade handle.

Fig. 2.

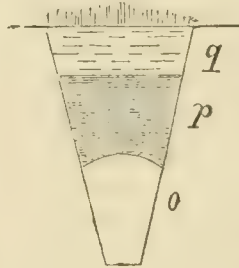


Fig. 2. is a section of a main drain, 2 feet deep, filled up again ; *o* is the water-way left open, $8\frac{1}{2}$ inches high ; *p* is the rammed clay above the suter or plug, 9 inches deep ; and *q* is the returned turf, with the grassy side uppermost $6\frac{1}{2}$ inches thick.

Fig. 3.

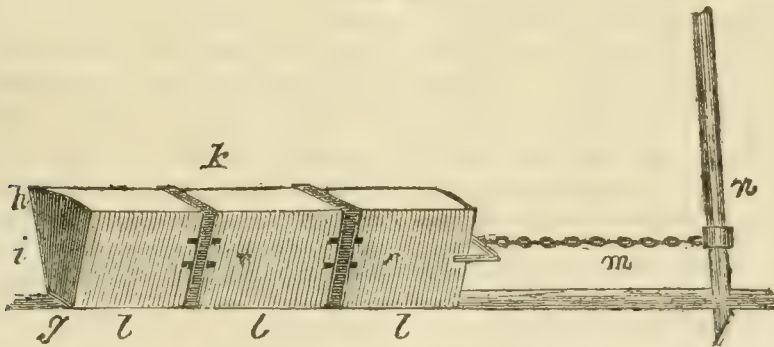


Fig. 3. is the main drain suter or plug ; *g* the width at the bottom, $1\frac{3}{4}$ inch ; *h* the width at the top, 4 inches ; *i* the length of the plug, $8\frac{1}{2}$ inches ; *k* shows the length of the suter, which may be divided into any number of pieces, say three or four, which are connected with one another by iron links on both sides, so as to allow the suter to turn a curve, *r r* the iron links which join the pieces *l l l* ; *m* the chain which connects the foremost piece with the lever *n*. A furrow-drain suter or plug is made $1\frac{3}{4}$ inch wide at the bottom, $3\frac{1}{2}$ inches wide at the top, and 6 inches in length. This will form a drain, the opening of which will be of the above dimensions.

Before commencing the operation of draining, the field to be drained should be carefully examined, to ascertain the proper fall ; this may, in most cases, be easily discovered by the eye, but when there is any doubt, the spirit-level, or any other with which the parties are most familiar, may be had recourse to. Should the field be in ridges, and the subsoil composed of stiff tenacious clay, every furrow must be drained, to make the draining perfectly satisfactory, beginning at the bottom of the fall, and proceeding through the whole length of the furrow, and taking every precaution to carry the drain as straight as the land will admit of, as curves or bends in drains tend to obstruct the free passage of water, and to form accumulations of earth at every angle. Where bends are unavoidable, the suter or plug, fig. 3, is so constructed, that, with a little attention, it will adapt itself to any curve that may be necessary, and where there is no acute angles. It is advisable to

use the line to make the first cut, until the workmen become expert both with the eye and hand in finishing the work. The turf 12 inches wide and $6\frac{1}{2}$ inches deep must be removed with the common spade, and when cut, should be placed upon the right side of the drain, with the grass uppermost. The cut in the clay is made with the grafting implement, fig. 1 ; and it requires some skill and nicety to remove the second cut properly. The first cut being 12 inches wide, the second should be cut at such an angle down the side of the drain as will leave the bottom of the second cut the exact width of the tongue *b* of the biting-iron fig. 1, at 9 inches in depth. The biting-iron then completes the cuttings, by taking out the last cut 9 inches deep, and which will, on the whole, leave the opening 12 inches wide at top, 2 feet deep, and $1\frac{3}{4}$ inches wide at bottom, as fig. 2. The earth from the two last cuttings should be placed on the left side of the drain, that from the last cutting being uppermost, which, in filling in the drain, will come readily to the hand to be first returned back. Any loose soil that remains at the bottom of the drain should be carefully and completely removed by a scoop spade, so as to leave the drain perfectly clean before the suter or plug is laid in.

Having proceeded thus far in the work, the plug, fig. 3, should be placed with its narrow edge in the bottom of the drain, and which will, if the drain has been properly formed, exactly fit it. Now commences the most important part of the process, which is the well ramming in of that portion of the

clay last taken out by the *bitting-iron*, as upon the proper execution of this part of the work depends the security and durability of the drain. This portion of the clay having been well rammed, and the pieces of the cuttings perfectly incorporated into one solid mass, the next cutting is to be returned in a similar manner, and equally well rammed; and, lastly, the turf must be placed as evenly as possible, and fixed in its original place by the rammer, which finishes the work, and leaves the drain, when the plug is drawn out, with a much larger water-way than can be obtained by any common draining-tile. This operation of ramming is performed to the full length of the plug, when the lever *n*, fig. 3, is stuck into the bottom of the drain, and the plug drawn forward to within 8 inches of the extent of the completed portion of the drain, and the work proceeds as before, until the whole drain is completed. Great care should be taken that the whole of the earth which has been removed should be returned into the drain, the ramming being the hardest part of the work, the labourers, when left to themselves, are apt to leave too much of the soil out of the drain. The best criterion that the work has been properly executed, is, that the whole of the soil is returned into the drain, without leaving too great an elevation of the top of the drain above the level of the surrounding surface of the field. Four men and a boy (who is employed in returning the soil into the drain) are required to each drain, to carry on the work expeditiously, and the men may be changed to different parts of the work, but the stoutest labourer should take the ramming process. Never allow a weak man or a boy to be employed in this business. When the whole field has been drained, it should be well rolled with a heavy roller, and no cattle or sheep should be in the field during the operation, nor until the drains have had full time to become dry and consolidated. There should be as few outlets or main drains as possible, the outlets should be finished either with tiles made for the purpose, or with brick or stone if more easily procured; and I have found it eligible to spar the main outlets with some good oak spars, driven across to prevent rabbits and other vermin from entering. Never allow the drains to be cut across the fall, but follow the natural fall of the field, in whatever direction that may be. The only exception to this rule applies to main drains, which will, of course, be placed across the fall in the lowest part of the field, at any part where a good vent can be obtained for the water. In general, from 22 to 24 inches will be sufficiently deep to cut the drains upon pasture land; but strata may occur where the drains will be required to be cut deeper, when the size of the plug ought to be increased, and the main drain plug should also be made large in proportion to the quantity of water to be carried off, or more main drains must be made. The main drain plug should be larger than the furrow plug, so that two plugs of different sizes must always be provided. We have recommended that every furrow on certain descriptions of land should be drained, but with level land, and a more porous subsoil, from 24 to 30 feet, or even more, between the drains will effectually clear the land of surface water; but on compact stiff clays the drains may require to be much nearer each other. The question should not be how few, but how many drains will be necessary effectually to obtain our object. We have seen upon gravelly and sandy soils, intersected by ribs or beds of clay, a single drain, judiciously placed, completely remove the surface water from 7 or 8 acres; and in fields of this character, where the ribs of clay are pretty regular, great expense may

be saved by the use of the bar, to discover their exact situation, which, having done, we have only to cut drains through them, and give a free vent to the water, which has been confined above, to effect your object. In fields possessing a considerable fall, it will be advisable not to bring too many drains, or too much water, into the main drains, as the weight and velocity of the water may injure them; and where a large body of water in these situations must unavoidably be brought to one point, a covered stone-drain should be constructed with stones of sufficient size and weight to resist the velocity and pressure of the water. But, in general, with a little attention, the water may be so divided, in hilly situations, by increasing the number of the main drains, as to obviate any inconvenience from this cause.

Plug drains are more adapted to pasture than arable land; but where stone cannot be obtained, or where tiles are considered too expensive, these drains have been used with very great advantage, and when thus used they ought to be cut full 30 inches deep. I have executed, within the last four years, more than 300 miles of clay-drains to my entire satisfaction. At the same time, I am aware that some of this kind of drain, made by careless and inexperienced workmen, have failed; while I can with great satisfaction state, that not one of my drains has given way. To obviate any risk upon this head, I recommend that the workmen guarantee the work by giving security for its proper execution, or by leaving a sufficient sum in the hands of their employers, to guard against such a contingency.

One very necessary precaution should not be disregarded, that clay drains, nor indeed any other kind of drain, should never be made in frosty or snowy weather, as drains made under such circumstances will not stand; nor should sheep or any other kind of stock be suffered to depasture on land while it is under the draining process, nor should the drains be left open even for a night, but the cutting of one part and filling in of another should be simultaneous operations.

The advantages of plug-draining are so many and important, that it is quite surprising how little of it has been executed. Pasture land, which before had been deluged with surface water, has, in less than two years, undergone an entire change of character,—the aquatic grasses, with rushes, which, before draining, were its chief produce, having entirely disappeared, with various other weeds, whose chief support was derived from water, and their places have been supplied by several of the best and most nutritive grasses, with vast increase, both in bulk and quality. Mowing has commenced a fortnight or three weeks earlier than before the land was drained; and land that had, in wet seasons, invariably rotted, not only every sheep, but heifers and colts, is now stocked without such casualties occurring. It has given great comfort also to stock, which must necessarily be sometimes out in cold and wet seasons, and the chief resting-place for these animals is now in the furrows, which, before draining, were in the winter season several inches under water. There is now no wear and tear of waggons and horses, no cutting up of land in drawing on and off the materials of draining upon the old system. Though last not least, the very moderate cost of executing the work, which will not amount in ordinary cases to 1½d. per yard, is a great consideration for improvers of land in these depressed times.

The system of clay-draining, as practised here, has been carefully examined at two different times, by Mr. Wallace of Kelly in Scotland, M.P. for Greenock, to whom I sent a set of the tools in use here, and

have had the pleasure of hearing from that gentleman, of his having put our plan of operations successfully to the test on his own estate. It is now therefore within the reach of any of his countrymen, who may choose to apply for farther information on the subject in that quarter.

ON THE CULTIVATION OF TURNIPS.

(ORIGINAL.)

The turnip belongs to the genus "*Brassica*," of class and order, "*Tetradynamia Siliquosa*" of Linnaeus, and to the order "*Cruciformæ*" of the natural system of Jussieu. We have several cultivated varieties, produced by cultivation, climate, and by sexual connection, and, with very little variation, admitting of the same mode of production. It is generally agreed that the turnip was originally introduced into Norfolk from Holland by Lord Townshend, who had seen it there when our ambassador at the Hague; and this circumstance, joined with the introduction of the potato by the immortal Raleigh, has conferred incalculable benefits on mankind, but which very seldom are allowed a due share of estimation in the sordid calculations of the human race. Mankind have ever been deceived by the illusive glare of useless qualities pomp and pageantry, honours and rewards are bestowed with a lavish hand on the plunderers of countries, and on the butchers of our species; a lazy overgrown priesthood has in all ages gulled and duped the people; lawyers cheat and deceive them; and actors, mimics, and buffoons are amply rewarded for holding up to them a mirror of their own vices and follies, for laughing at them in their face, and for fleecing them of their money; for corrupting their morals, and debauching their imaginations. But the man of liberal ideas, the philosopher, or the patriot, who devotes his time and his talents in trying to instruct and improve mankind, is passed over in contemptuous silence; the benefits of his labours are slowly and coldly received; he is assailed and persecuted with all the jealousy and malice of bigotry and interested ignorance, and in many cases is glad to escape with his life. No honours, except the block, were awarded to the unfortunate importer of the potato; no statues have been erected to the memory of the illustrious individuals who have in a similar manner benefited the human race; had they sacked cities, and choked the streets with the dead; had they burned towns and plundered countries, their posterity would have been ennobled by a grateful public, their glorious actions would have been sung by many a sycophant and amply recorded in the page of history. Tardy justice is sometimes done them, when the sluggish intellect of the mass has by slow progression reached the same meridian; woful and lamentable is the chance that reason has against prejudice, and sure and certain is the fall of that man who allows his thinking powers to publish ideas, even one quarter of a century in advance of his fellow creatures. For my own part, I ever look upon such individuals as being the real benefactors of the human race, and entitled to the everlasting gratitude of the latest posterity. Most of the arts and sciences, during the progress from infancy to their present state, have been much advanced by some single discovery,

which has accelerated the progress much beyond what might have been expected during a great number of years, and has interposed a new era in the history and application. The invention of printing greatly facilitated every improvement; the discovery of the magnetic needle has brought the most distant nations into a regular system of maritime intercourse—has shortened distances, and introduced civilization into the most remote corners of the globe; while the invention of gunpowder completely overturned the art of war, introduced a new system of tactics, rendered the process less bloody, and brought success to be more nearly a matter of calculation. In our day we have seen the mighty effects produced by a combination of science and art in adding to the comforts of civilized life, and in the application of steam power we behold a most stupendous monument of human ingenuity, probably not yet half developed, and capable of much more extensive employment. The introduction and cultivation of green crops constitutes an era in the history of agriculture, not less important, or less valuable than any of the splendid discoveries which have added so much to the value of other arts, and though some real or rather "supposed" causes have retarded a more extensive and easily practicable cultivation, the progress hitherto made has doubled our agricultural produce, has afforded a better and more regular supply of food, and has added to the general comforts of every class of society. An extended cultivation of green crops joined with our other modern discoveries would nearly again double our agricultural produce; and the day is fast approaching when all restrictions and fetters imposed by ignorance, prejudice, and power, must snap before the march of intellect, and our common wants, and allow the cultivation of the earth to proceed with other arts, and to take advantage of every known means of improvement to supply the primary and indispensable requisites of life. Self-interest and individual gratification must ultimately give way to the general good.

The method of scattering seeds on the ground from the hand, and then covering them by drawing something over the surface, in order to produce a crop, seems to have prevailed from the earliest antiquity, and with some exceptions, forms the general practice of the present day. It is generally agreed that the mechanism of an organ suggested the sowing of seeds in drills to the ingenious mind of Jethro Tull, no doubt searching for some mode of clearing his crops of weeds; and about the same time, it would appear, that the great advantages to be derived from a better working and pulverization of the earth had occurred to that acute and original thinker. In conformity with the most approved mode of rewarding such beneficial discoveries, he was allowed to end his days in a prison, as a suitable premium for his suggestion, which, taken up and improved upon by others, has overturned in detail nearly the whole system of agricultural practice. Had he applied himself to any of the useless occupations of life, which minister to the luxuries and personal gratifications, and pander to the vices of the great ones of this world, how different would his reward have been!—a coronet might have encircled his brows. At the first introduction, turnips were sown broadcast as other seeds; and to Norfolk the adoption of drilling, and of ploughs drawn by two horses yoked abreast, and guided by reins without a driver, is generally ascribed. Broadcast

sowing is yet much practised in the southern counties, and when the land is fine and loamy, and free of small annual weeds, very good crops are obtained. This is much the case, owing to the composition of the soil, and the dryness of the climate. The land is wrought as fine as possible by ploughing, harrowing, and rolling; the manure is then laid on and ploughed in, the turnip seed sown, and covered by rolling, or by light harrowing, or by both. On clean lands, little difficulty occurs in hoeing broadcast crops; but on moist loamy soils, in humid climates, where turnips delight to dwell, and where they are most generally cultivated, and with almost certain success, an obstacle of no small magnitude immediately presented itself. The small weeds covering completely both the land and turnips, and the season much encouraging vegetation, a necessity exists of thinning the turnips at any rate, and also for a space where to lay the weeds and for the hoer to stand, so as to allow a clean and open space for the young plant. Great advantage is also thought to be derived from the horsehoeings, of which drilling admits even in the driest and hottest weather, and with some very favourable and particular exceptions, experience has determined in favour of the drill system.

About seventy years ago, a spirit of enterprise in agricultural matters began to spread, and a Mr. Dawson, son to a farmer in Tweedside, visited Norfolk, and carried back with him the mode of drilling, and of yoking two horses abreast. His father's farm not being adapted for turnips, he was baffled in every attempt to introduce them there; but soon after he rented a large farm in the vicinity of loamy soil, and there he succeeded beyond his most sanguine expectations. The field on Frogden farm is yet shown, where he drew the first drill himself, with two horses yoked abreast, and guided by reins. The advantages he derived for the crops as winter food, from cleaning the land for the succeeding crops, and in raising manure, were quickly so apparent as to silence all opposition; the system spread rapidly, most materially aided, no doubt, by the increasing value of all kinds of farm produce, which stimulated every exertion to meet the demand, and without which stimulus it may be doubted if we would have possessed at this day our present improved knowledge of cultivation. So soon as harvest is over, and the sowing of wheat and other autumn work is completed, the lands intended for green crops the following year are ploughed; and in the spring, so soon as the season admits, they are cross-ploughed, and harrowed, and rolled, and ploughed again, till reduced to as fine a tilth as can possibly be effected; and weeds, and stones, are carefully picked off, after each harrowing and rolling. The securing of moisture is the great object in the management of turnip soils; for on that moisture being retained depends the vegetation and success of the turnip plant, till it reaches the manure for support. If it could be attained, I would recommend a space of eight or ten days to intervene between each ploughing, during the spring months, and the land to be ploughed, harrowed, and rolled down flat again with the utmost despatch; all for the purpose of retaining and obtaining moisture.

The land being now well wrought, and perfectly cleaned, the drilling commences. The mode of opening drills first adopted, and yet continued on sands and fine loams, is by means of a plough with two wings, called a double mould-board

plough, which makes a drill in going and returning, and, with a pair of quick and able horses, will drill five or six acres a day. It splits the drills and covers the dung in the same manner. On fine lands this plough answers the purpose very well; but the great advantages derived from cultivation of turnips soon induced the attempt on stiff loams, where a cloddy and crumbling surface will result from the best pulverization, and where the wings of the double mould-board plough prevent its going deep enough into the stiff land, so as to raise fresh soil for the turnip-seed to vegetate in; and, consequently, the dry cloddy surface was pushed together over the dung by the wings of the plough. On these stiff loams our best and soundest crops are obtained; but a difficulty occurs in securing the braird, and in reducing the soil in wet seasons. In many places these soils lie in high and crooked ridges, and, when planted with green crops, are drilled across and water furrowed. The above-mentioned deficiency of the double mould-board plough was soon observed, and the common plough was introduced to open a drill by going and returning in the same furrow. This method is the slower by performing only about two acres a day, but the best and most effectual yet known. Despatch on large farms being so urgent, another method has been introduced, by opening a drill by one furrow of the common plough, and covering the dung by two furrows, or with one where the land is light and fine. In this process the ploughs are all provided with drawing trees, of $4\frac{1}{2}$ feet in length, to stretch over two drills, and the horses are tied by the bridles exactly to the same distance. The drilling begins from a straight side of the field; one-horse carts bring forward the dung as quickly as possible from a heap in the field, in an intermediate state of decomposition, the fermentation going on rapidly, but not ceased; it is pulled into rows for three drills, divided, spread, and covered, and the turnip seed sown and rolled down with the utmost possible despatch. In opening the drills the ploughs make two in going and returning; they work at opposite sides of a "break" set off for them, and containing a certain number of drills; and it requires very considerable dexterity in the ploughman to meet exactly, and have no more space at one end than at the other. In covering the manure the right-hand horse walks in the furrow where the plough went last; the one on the left hand walks on the top of the second drill from the right hand horse; and the plough splits the drill between, and throws as heavy a furrow over the dung as the horses can move. At the end of the field they turn to the right hand, and, in returning, the horses walk each in a furrow, with the plough in one between, and which again throws a heavy furrow of fresh soil over the dung from the opposite side. This process performs the same quantity of work as the double mould-board plough, with the great advantage of penetrating to any depth, and raising fresh tilth. The largest arrangement may be—two ploughs, opening drills; four, five, or six carts, bringing forward the manure according to distance; five spreaders, with a superintendant, and a man unloading the carts; four men filling the carts, and four boys driving them; three ploughs, covering the dung—the turnip sower close by them, and the roll every afternoon if the season be dry. From eight to ten acres a-day may be finished by this arrangement. On a smaller scale—four ploughs, assisting each other

in opening and covering; or, one plough opening, and two covering; with the other arrangements corresponding. Four and six acres a-day may be performed by these methods. On fine lands, where the double mould-board plough is used, one plough opening the drills and one covering the manure, with corresponding intermediate arrangements, should finish five acres a-day. On very large farms, some farmers prefer dividing the force into two divisions of four ploughs each, as causing less hurry and confusion. Ten minutes is the time allowed by our best cultivators, from the first opening of the drills till the dung is deposited; and other ten from that time till the seed is sown. In managing such dispatch, much forethought and experience is required in disposing and combining the force, so that no stop or delay occur, and requires a person of activity, both in body and mind. Much difference is perceptible on these points, even on contiguous farms, arising from want of ideas and of clear arrangement in the superintendant, though of large experience.

In sowing turnips with bones, it is a general custom to sow them on a flat surface by a machine provided with coulter, which make a rut, and deposit bones and seed together. As it is essentially necessary that bones be covered with fresh soil, I have always preferred to make drills with one furrow of the common plough, and then split the ridges with the coulter of the bone sower, and thus obtained a depth of fresh soil wherein to deposit both bones and seed. If the bones be not covered, a double mould-board plough may be passed along the drills: six to ten acres a-day may be sown in this way. I have sometimes thought it would expedite the sowing process if our two-drill turnip sowers, now generally used, were provided with a heavy roll behind to roll and finish the drill at once; but I found it too heavy and cumbersome, and required two horses to draw it: and two horses in length are very inconvenient among drills. In dry seasons, and especially on cloddy soils, rolling is indispensable to press the seed down to the manure, and to level the surface to resist the drought. Our common rolls are much too light, and I fancy I have often seen crops lost from fear of rolling, after much expence and labour bestowed.

When the turnip plants are nearly fit for hoeing, a scuffling plough with knives is passed between the drills, which cuts all the weeds in the intervals, and much reduces the process of hoeing. In some places, two small ploughs, joined together, are used for the same purpose on stiffer soils, where it is thought the scuffling plough is too light. The turnips are then singled out to the distance of eight or ten inches; the scuffling plough works so long as weeds appear, and the hoers again pass along the drills, cut out weeds, and any turnips left too thick before. The practice of earthing up turnips with the double mould-board plough is now much relinquished, little or no advantage having been observed to result from it.

Swedes are sown from middle of May to middle of June; yellows during same time; white globe green and red tops, from middle of June to middle of July. Some hybrid varieties have been lately published, but do not seem to have superseded, in any degree, the well-known varieties above mentioned. The average expence of cultivating an acre of turnips, exclusive of rent and taxes, may be taken at from 7*l.* to 8*l.* From the after crops much of the profits and advantages must be looked

for. On lands improved by paring and burning, turnips are sown broadcast on the surface made fine by harrowing. They might be drilled, but the manure being scattered, little or no advantage might follow.

In some soils and seasons, turnips are exposed to a disease at the root, called "fingers and toes," caused by insects. No remedy has been found. The attacks of the fly are principally known in the southern counties, and in many instances the ravages are very extensive. Certain seasons are more fatal than others, sweeping clean a field in a few hours. No cure has been found, all the prescriptions published being of no avail. The latest proposition is, to kill the insects by a jet of steam from a boiler, passing along the drills in the manner of a water cart. This mode seems very questionable. It is generally recommended to prepare the land and manure as finely as possible; to push the plants quickly beyond the state in which the fly attacks it. Of late years a new enemy has appeared in caterpillars, which devour the leaves in an advanced state. No effectual cure has been found;—rollings are useful;—but as they and the fly evidently arise from the state of the atmosphere, a preventive may be difficult to find.

J. D.

ON SWEDISH TURNIPS.

[The immense importance of the turnip crop renders any information as to the growth and keeping of that valuable root acceptable, we therefore offer no apology for republishing two letters from the pen of that talented agriculturist Mr. Blaikie, which appeared in the old *Farmer's Journal* some years ago.—Ed. F.M.]

SIR,—Although, amongst the various improvements in agriculture introduced or brought into general practice of late years, few are of greater importance than the cultivation of Swedish turnips, yet prejudices (apparently well founded) still exist against that valuable esculent; the intention of the present communication is to endeavour to remove those prejudices, by the means of answering, and pointing out a remedy for the principal objections which I have heard stated, as militating against the still more general cultivation of that inestimable vegetable.

The objections I allude to are, first, that when Swedish turnips are grown upon clay soils, or upon loams incumbent on retentive subsoils, they cannot be eaten on the ground, but must be drawn off to be consumed elsewhere; and as stock require a regular supply of food to keep them in a growing state, it follows to procure that supply, the land must frequently be poached and injured by being carted upon in wet weather; second, that when Swedish turnips are grown upon light soils, and stand for spring use, they throw out fresh fibres, and rob the land by reason of drawing additional nutriment from it; and third, that Swedish turnips are liable to be devoured by game. I have also heard various other objections, but of less importance than those already mentioned.

I hope it will not be deemed impertinent, nor bordering on egotism, if I here give a concise account of the cultivation of Swedish turnips on the Earl of Chesterfield's farms at this place, as that

will naturally lead to the more immediate object of this communication, viz, the removal and preservation of the crop, and in doing so with the least possible injury to the land.

We here generally prefer deep marley loams for growing Swedish turnips, yet we sow them with success upon various soils, in all the intermediate shades of loam between clay and sand, and frequently upon strong loam, incumbent on impervious till subsoil. We make it a rule to begin sowing (on the stronger soils) in the last week in May, or first week in June, and continue sowing Swedes till the second week in July; they are all sown in drills in the Scotch or Northumberland method, are horse-hoed *between* the rows, and hand-hoed and thinned *in* the rows by women and children. We consider the early sown Swedes to be full grown by the middle of November, and in some seasons rather earlier; we then take the first favourable opportunity of the land being in a proper state for our operations, when all spare hands (men, women and children) are set to work; the turnips are pulled up, and the roots cut from the bulbs, (the tops being left on); old gorse or bill-hooks, broken sickles, or reap-hooks, and such like implements answer for the purpose, the turnips are thrown into carts and conveyed to an orchard, or some other piece or pieces of old turf land most convenient to where they are intended to be consumed, they are there shot out of the carts in heaps, and afterwards *placed* as we term it, that is, the bulbs are placed close to, and touching each other, with the tops uppermost, and only one turnip deep, (an acre of good turnips from the field occupy a much less space when placed, than can readily be imagined by those who have not tried the experiment); in this manner we endeavour to secure one or two months' supply for the stock intended to be fed with them, and find them keep good the whole winter; if the weather proves very severe a slight covering of litter is thrown upon them.

The depots are kept so far sacred as to be only resorted to in cases of emergency, such as when the land is too wet to be carted upon without doing injury, in time of severe frost, deep snow, &c., &c., while, at every favourable opportunity in course of the winter, we keep adding to the store in the preserve. As soon as the turnips are removed from the field, the ploughs are set to work, and the land drawn up into such sized ridges as are thought proper; by this means the strong soils become pulverized and the spring work expedited, as the ground only requires to be scarified and harrowed to make it in a proper state to receive the succeeding corn crop, which is always drilled in. We make it a rule in spring, so soon as the turnips begin to strike fresh fibres into the ground, and the tops run up to seed, to draw off such portion as are not required for the immediate supply of the stock, and place them in the manner before described, if under the shade of trees in spring, it will be an advantage; in such situations we have had them keep good till Midsummer, for they are not liable to rot, nor will they become too dry for use. As to the third objection, the complaint must be partial, as it can only happen (in a serious degree) where game is too plentiful, and where the cultivation of Swedish turnips is not sufficiently general; in such districts the practice here recommended of removing the turnips from the field, and placing them in narrower compass, will be found the most effectual means of securing them from the attacks of those predators.

On these farms we have tried various means of preserving Swedish turnips, such as by cutting the roots and tops off, and camping the bulbs in the manner of potatoes; also by storing them in barns and other out-houses; but have never succeeded so well as by the method here recommended.

Should you, Sir, think this detail worthy of a place in your journal, it will probably be remarked by some of your readers, that the practice here called *placing* is not new. I am aware such a remark would be perfectly correct, but I have reason to believe that although not new, it is not in general use; and it is therefore probable that by your inserting the communication in your paper, it may be the means of introducing the practice to some districts previously unacquainted with it.

I am, Sir, your humble servant,

FRANCIS BLAIKIE.

Bradby Hall, Jan. 11, 1814.

ON PRESERVING TURNIPS.

SIR,—In a letter addressed to you, dated 11th January last, I communicated a detail of the method practised at this place for the preservation of Swedish turnips, and as you thought that letter of sufficient importance to be worthy of a place in your journal, I am induced to believe the following detail (as being a continuation of the same subject) may also prove acceptable.

In the first weeks of last November we secured the produce of several acres of Swedish turnips in the manner called placing, as described in the letter before alluded to; such part of those turnips as were not consumed by stock remained in the depots the whole of this very severe winter without any covering whatever, except by occasional falls of snow; they were very little injured by the severity of the weather, while two-thirds of the remainder of the same crops left in the fields perished and became rotten, and in some parts of the fields where the snow was drifted off, not one turnip in ten remained sound; we have now (at the date of this letter) a considerable quantity of placed turnips perfectly sound and good remaining in the depots; the bulbs have thrown out young fibres, and the tops are pushing up. Were we to remove those turnips and replace them on fresh turf, the vegetation would be checked, and they would continue sound for months to come. This detail will probably be thought mysterious by those who have never tried the experiment; it certainly does appear paradoxical, that Swedish turnips should resist the severity of the weather better, when treated in the manner recommended, than if left in the field where they have the protection of the earth partly round their roots; such, however, is the fact.

I have observed that when turnips from the depots are given to stock in the spring months, they do not reject them, but, on the contrary, eat them with avidity; yet when they are mixed with turnips fresh from the field, sheep in particular prefer the latter; this seeming objection does not militate against the great advantages otherwise obtained by securing turnips in the manner recommended:—These I state to be, 1st, Removal from the field with the least injury to heavy land. 2d, More certain preservation of the root. 3d, The means of obtaining a certain supply for the stock in severe weather; and 4th, Security against the destructive ravages of game. In the latter case, if the depots are not otherwise protected, they

may be readily guarded by a rough stake and thorn wattled hedge. Hares and rabbits will seldom attempt to break through a dead thorn or gorse hedge, although they will soon eat their way through a live one; for instance, such game are very destructive to young quicksets, but if a few dead small branches of thorns, gorse, briars, or other rigid plants be drawn along the young hedge rows, they will be effectually protected, as our experience at this place has demonstrated.

I leave it to those better qualified to give a satisfactory or philosophical reason why Swedish turnips are better preserved by being placed in the manner I have recommended, although they are left exposed to the subsequent severity of the winter's frosts, than if they were left in the field where the earth partly covers the bulb; such, however, is the fact, and it may be sufficiently cut for the practical farmer to be advised of it.

Although, as I have before stated, the placed turnips keep sound in the depots without any covering, yet I advise that, on the appearance of severe weather, a little loose straw be thrown over a part, as stock will certainly prefer turnips not frozen. I have not discovered any great diminution of weight in the preserved turnips, nor any difference in the stock thriving, when kept on them or on others fresh from the field.

I give a detail of the following circumstance as being applicable to the subject (the hint may also prove instructive): Notwithstanding the unprecedented severity of last winter, there now is in the Earl of Chesterfield's kitchen gardens at this place, an abundance of healthy cabbage, cauliflower, and lettuce plants, which have stood the winter without any protection or covering. His lordship's gardener (Mr. Groves) has made it a practice, when the young winter and spring vegetable plants grow over luxuriant in autumn, to pull them up and expose their roots to the vicissitudes of the weather for a day or two; he afterwards replants them in their former places, and, in some instances, when the weather has been very mild late in the season, he has repeated the operation a second and even a third time; this practice staginates the growth of the plant, hardens it, and invariably enables it better to withstand the severity of the following winter. To this practice, which was followed last autumn, Mr. Groves attributes his wonderful success in preserving the before-mentioned vegetables, while very few have survived in the gardens in the neighbourhood. The practice, simple as it is, is certainly well worthy of imitation.

May not the same cause which operates so advantageously in the preservation of vegetables in the garden, be also assigned as a reason for Swedish turnips being better preserved by the method of placing, than if left in the fields. With this observation I conclude, and again subscribe myself, your humble servant,

FRANCIS BLAICKIE.

Bradby Hall, April 6, 1814.

ON THE CORN LAWS.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—It is the day of agitation, much more so than of amendment. Many things may doubtless be made better, but there may be change without improvement. With this short but needful preface, I proceed at once to the subject which I wish to bring under your consideration, and that of the public. I do not propose to advance anything new, but I do propose to speak of a question of vast importance—a question which, I trust, neither the ignorance, selfishness, or restlessness of some men will be able to embarrass, nor on which they will be able to mislead the public mind.

I must here make one leading observation, upon which the weight of all I have to say, and all that any one can say upon the subject, must depend. It is this—*MEN CANNOT DO WITHOUT BREAD.* Men may exist without brandy, wines, or tobacco—women may live without silks, tea, or sugar—but neither *men nor women can do without BREAD.* This most important fact seems to have been lost sight of by those who write, speak, and agitate for a repeal of the corn laws. It is desirable for every country to grow enough bread corn for the consumption of its own population. But it is absolutely necessary for an island, especially for a commercial and manufacturing island, such as Great Britain, to do so, watched as she is, and envied by every nation in the world.

Suppose, for argument's sake, that with the corn laws as they are, precisely enough wheat was grown in the British empire for its consumption. Supposing, again, that the corn laws were repealed, a vast number of acres would be thrown out of cultivation, and we should be very short of our supply. The ready answer of the repealers to this is, we can import corn cheaper. Certainly, we admit it. We can import corn cheaper now than we can grow it; and we can exchange our manufactures for foreign corn, that is, if the continental growers choose to take them.

Let us now briefly consider these two points, viz. —1st, The importing corn cheaper than we can grow it. 2dly, The exchange of our manufactures for foreign corn; and then, lastly, offer a few hints for the better or more satisfactory arrangement of the duty on wheat, and supply of our population. We buy corn cheaper in foreign markets. Yes; but that does not prove that we have cheaper *bread now*, or should have it cheaper if the corn laws were repealed to-morrow. The continental grower or merchant asks as much as corn is worth in England, less by all expenses, duties, &c. &c. If duties were lowered, he would raise his price, and raise and fall just to meet the demand. But further, if by a repeal of the corn laws a million of acres were thrown out of cultivation in England, and there happened to be a short crop, would our bread then be cheapened? No, the foreign merchant would take advantage of our distress, and make us buy at any price. Or, if there was a short crop abroad, they could not sell, and we should *starve*. And in the event of a war, they would not sell to us at all, or would not be allowed to do so, even if willing, and our population would *starve*. This is a most serious, an all-important question—people may do without French wines, but they cannot do without *bread*! Again, if when our lighter lands are thrown out of cultivation, the foreign growers refuse to give us wheat but at a very high price, which they assuredly will, and will not take our manufactures in lieu of corn; we must

ENGLISH AGRICULTURAL SOCIETY.—

His Excellency, Andrew Stevenson, Envoy Extraordinary, and Minister Plenipotentiary to the British Court from the United States of America, was in December last unanimously elected an honorary member of this Society.

in that case send very large sums of money out of the country for wheat, thus putting it into the pockets of foreigners instead of our own farmers, while at the same time bread is as dear as before the corn laws were repealed. Bread is as dear, and the people have less money to purchase it with. Besides, in reality we should get nothing in return for the vast sums of money which we should send out of the country for wheat. If we buy foreign timber, it is worked up into various useful articles; English industry is employed upon the raw article, and we see its results. If foreign raw cotton is imported, it is seen in the shape of *manufactured* domestic comforts, or *manufactured* articles of export. But if we give a million of money for wheat, when eaten, where is it? It is gone—we have nothing. It will be said, “We have well fed people.” True! and such I wish to see; and such are better than all the cottons, and machinery, and railways, and manufactures that ever were invented. But why cannot we have such fed on *our own wheat*? Why rob our farmers to put money in the pockets of foreigners? But we can have our own wheat, and ought, and I almost hope, if the fever-brained agitators do not prevent it, that we shall, yes, shall have *cheap bread* grown in England without a repeal of the corn laws.

Secondly. It is said that the foreign merchant will take our manufactures and give us corn in exchange. Yes; while we do not *want* corn they will. One article is bartered for another. But let us *be in want* of corn, and they will not. They will take advantage of our distress and pinch us: they may do without cottons, but they know that we cannot do without *Bread*. It is all very well talking about cottons and wheat being both merely and alike marketable commodities. To two merchants with equally full bellies they are; but to the poor and hungry man there is this wide, this immense difference—that the hungry man cannot eat *cotton*, though he can eat *bread*. They are not *obliged* to take our manufactures, we must get their corn, if by a repeal of the corn laws we throw our light lands out of cultivation, or *starve*. The question is simply this—while we have plenty of bread, we can discuss the matter very pleasantly; we can sell or exchange (it is all the same) our machinery, our woollens, our cottons, &c., for foreign money or wheat; but let England once be reduced to the necessity of getting wheat or starving, and the foreign merchant will take advantage of it, and will take money only and sell at starvation price; or, if it suits the policy of the Government of the country from whence we get our wheat, will not give it at all.

Just imagine a case, a highly probable one, nay, one that is almost certain. Russia has long been doing all she can, and is still doing all in her power, to annoy and cripple England. Her sneaking, crafty policy has changed into a more decided form of injury and aggression. In the Baltic, in the Levant, in Western India, in North America, Russia has done all that she could do, without declaring war, to annoy and injure us. Supposing England dependent on a foreign market for wheat; the Baltic ports are those from which we must look to draw our chief supply. France is very uncertain—the Mediterranean very distant. Has Russia no influence in the Baltic even in peace? (Has she had no influence over Turkey?) But in the event of a war, would she not be Lord Paramount in the Baltic? Most assuredly. Would a single bushel of wheat be allowed to leave the Baltic? Most assuredly not. The ports abroad would be closed against us. We should not have bread cheaper. There is no certainty that our manufactures would be taken by fo-

reigners, but the contrary. If we did buy corn we should have to send vast sums of bullion out of the country; and worse than all, in the event of scarcity or war, that is, exactly when we most wanted it, *we should not have bread at all*.

I would now propose a simple remedy, whereby bread might be cheaper, and yet foreign corn excluded, or nearly so. I should, however, first premise that the duty should never in any case be less than 20s.; that should be the minimum, and it should rise from that according as wheat lowered in price. But I should fain hope that there would be no occasion for importing wheat at all. The plan I would propose would be this. Individuals or a company should be encouraged by Government to purchase wheat in plentiful years at a certain price fixed by Government; that is, the price should be named by Government, and the wheat considered as bought at so much per bushel, whether the man or company bought the corn at less or more. A certain allowance, also fixed by Government, for storage, waste, insurance, per centage on capital, &c., should be made to the company or individuals, so that they could not be at any loss; and the corn should then be sold when required by the Government, and at a price fixed by it: they would, in fact, be merely Government factors. Or that the Government itself should purchase up the corn in a plentiful year and store it, selling it in time of scarcity. I know many will sneer at such a proposal. Let them; they are no true friends to their country. Supposing (which I do not anticipate) that Government, that is, the taxes or the country, were losers by this trade—suppose they bought two millions worth of corn, and sold it at one million eight hundred thousand pounds, the money lost would only go into the pockets of Englishmen. If Peter lost his money, Paul would get it; and as they had all things common that would be no real loss. The farmer would then have a *sure* market for the sale of his corn at a fair price: when wheat was very plenty, he would get more than, under present circumstances, he ever can; when wheat was scarce, it is true that he would get less, because the stored wheat would come to market. But he ought to be glad at this; for a certain and equable profit is always better to a man of business, than a high price to-day, and none at all to-morrow. He would get on the whole more than he does now, and get it more equally; more, because foreign corn would be excluded—more equally, because the price would be kept on a level.

But though the farmer would get more for his wheat, the tradesman would get bread cheaper. Paradoxical as this may appear, it is easy to be demonstrated had I space to do so: but it will be seen at once by those whose attention has been alive to the foregoing remarks. The stored corn would ensure the tradesman bread: the *certainty* of a market for wheat would induce the farmers to grow wheat, and thus throw plenty into the market; and the money kept at home, which would have been paid for foreign wheat, would circulate at home, and help the market further still. Besides, the manufacturers and tradesmen would have another advantage, viz., that the money which would have been paid for foreign wheat, would bring in other raw material to be wrought upon by English industry, thus giving employment, and sending out *manufactured* articles instead of gold.

Far from thinking this visionary, I think it both simple and practicable; and to those that are acquainted with history, nothing new. I trust that the few foregoing hints, just thrown hastily together, may attract the notice of those better able to handle

the subject; I may perhaps take it up again. I do sincerely hope that Government may not be induced to yield to outward pressure, but calmly and deliberately act for the good of the country, and not for the bustle of a few hot-headed agitators.

Yours, Δ.

P.S. I would just observe that the corn laws, though directly framed for the protection of the farmer, indirectly affords protection to the manufacturer and tradesman, and must do so as long as the farmer grows what they eat. Besides, the great demand for manufactured goods is at home; impoverish the consumer of them, and you impoverish the maker of them.

[Without entering on the question of the corn laws, we most assuredly do think the plan of our correspondent, for purchasing and storing corn by the Government, quite visionary.—ED. F.M.]

GRASS LANDS NEAR LONDON.

During my rambles round the great metropolis, I often strolled into the grass fields which lie principally on the north side of the city, and are used for affording hay and green food for the dairies of cows that supply milk to the inhabitants of our modern Babylon. The fences around them afford a striking specimen of the ancient mode of enclosing, with crooked serpentine boundaries, extending over most of the southern counties; and the modern repairs show but little improvement, being all done in a temporary and seemingly careless manner, arising, no doubt, from their being so much exposed to the unceasing depredations and damages of trespassers and strollers. The soil all round London is naturally of very indifferent quality; and with the exception of the alluvial and gravelly soils near the Thames, it is mostly a cold clay on a wet and impervious bottom, which extends over a great part of Middlesex, and into the adjoining counties. The vicinity of the metropolis affords an overwhelming supply of manure, and an immense fertility is thereby obtained, though the fields I have mentioned afford of themselves a very sober specimen of skill in grass farming. The quality of the soil is certainly very inferior, but the supply of manure is such that land may not only be improved to the highest pitch, but almost made afresh. Great bulk of produce seems to be the object in view; and to produce this result, heavy doses of manure are often applied in a very indifferent state of preparation. It would seem to be a law of production, that if nature be forced and overstrained by artificial applications to yield a great bulk of any article, a degree of coarseness ensues, and on these fields it is very evident that that result has followed. The bottom has become coarse and foggy from repeated mowings and the immediate applications of manure. Draining is much wanted to render the lands fit for winter feeding sheep, which, by eating the herbage bare by close stocking, destroy the old white remnant which has escaped the scythe for many years, and then, by seeding and manuring in that bare and trampled state, a sweet and vastly improved sward may be obtained. On these fields the "*Aira caespitosa*" has appeared in considerable quantity—an infallible sign of the want of draining, and also of very bad farming. In order to destroy this hassocky and most unsightly grass, I see workmen with a spade dig round and lift up the fibrous mass at the root, and lay it down inverted in the

hole whence it was taken, and sow seeds on the top. This may check its growth, but the tendency in the land to produce it is in no wise diminished, and the circumstance of the hole being filled with water during winter must increase that tendency in the immediate neighbourhood of the old plant. Draining is the radical cure, followed by fine top-dressings, and by grazing alternately with mowing, for a time at least, until the old, soft, and white foggage be got rid of, and a sweet and healthy herbage be obtained.

The manure applied on these fields is what we call putrescent; which has lain a year or nearly so in a heap until all fermentation has ceased, and has become a cold rotten mass. Nature is gorged by the heavy and frequent applications, and though bulk be obtained, it is coarse and the aftermath also. It has been agreed upon by many scientific and practical men, that the warmth afforded to the plants during winter, constitutes the principal benefit they derive from top-dressing; and hence it has become customary to lay the dung on grass lands rough from the fold yard, and then roll, harrow, collect, and carry off the rubbish in the spring. Less expense is incurred, and more space will be covered by a quantity of manure. When we touch on the subject of the application of manures, we arrive at that perplexing point, "What is the food of plants?" which, if ever discovered, will prove a mighty step in advance, as it may lead to a better mode of application. But nature has hitherto eluded our curiosity, satisfied at present with granting us our own observation and experience to lead us by steps to the final discovery, probably sooner than we expect. We know enough of the food of plants to suppose that it must be in a state of solution or most minute subdivision; in what manner it may be most effectually and most profitably supplied, is an inquiry of the last importance. I never can believe that a gross, cold, rotten mass of mixed excrementitious or other matter laid on grass lands, or in a drill, is in the best state for affording food to be taken up by the tender rootlets of plants; and I never can help comparing it to a lump of raw and uncooked beef set before human beings, who are compelled by hunger to satisfy the natural appetite, and are thus gorged and raised at probably double expense to a large and coarse bloated carcase, upon a quantity which, with a different application, would support two of smaller and much more useful dimensions. But with our present knowledge of application, great loss seems incurred, for the liquid part of the heap seems distilled on purpose into the ditch or roadside. I also observe that the cleanings of ponds are wheeled out and laid on these fields without any preparation, as mixing such substances with lime has been objected to, as it is thought to dissipate the vegetable matter. But a query may be again started on the gross and unreduced form of such substances.

For top-dressing grass lands I always prefer to have the compost of lime and soil reduced as fine as possible by repeated mixings and turnings; and for grass lands, and even on inferior arable lands, I prefer good compost of lime and soil to an application of lime by itself. I may be wrong, but such is my honest conviction. During my practice in Leicestershire, that splendid county of turfs and weeds, I found a field of thirty-six acres, forming a sort of outer park to my employer's demesne, which had been mown for years, and had acquired a foggy and very unsightly state, and an herbage which no beast would eat. I had some large fish ponds cleaned, and adopted every means to procure compost in the vicinity; even clay itself, dug from the watering pond made for the cows in the field, became, from

being mixed with a plentiful dose of lime and frequent turnings and mixings, a compost of very effectual application. I allowed 40 one horse cart-loads to the acre in the winter months, and in the spring bush harrowed and applied the roll liberally. In May, stocked heavily with ewes and lambs, so as to keep the herbage bare as a bowling-green, the sheep seldom grazing on the part undressed. Next year manured the remaining part, and the following season the whole field formed a sound and sweet pasturage of the most beautiful green appearance, equally relished by sheep and cattle, and not one vestige of the old foggy herbage could be seen. Draining was wanted, but I was not allowed the expense.

The fields I have mentioned near London, like all our other grass lands, have been sown by nature and by chance, and are wholly wanting in the even and regular appearance now produced by systematic cultivation. The prevailing grasses are few, and not of the best sorts; and provided bulk be obtained, no attention seems to be paid to quality. In 1837, I observed the grasses narrowly, and found on one field, carrying a very heavy crop, the following varieties, viz.—*Lolium perenne*, *Bromus arvensis*, *Festuca pratensis*, *Poa pratensis*, *Alopecurus pratensis*, *Cynosurus cristatus*, *Anthoxanthum odoratum*, *Holcus mollis*, *Hordeum pratense*, *Lathyrus pratensis*, red and white clovers, very scarce. On another field of a rather drier nature, I found all the above, with the addition of *Plantago lanceolata*, *Aira alpina*, *Festuca loliacea*, *Dactylis glomerata*, *Holcus lanatus*, *Phleum pratense*. On the first field the *Poa pratensis* and the *Bromus arvensis* constituted three-fourths of the herbage, and on the second field the *Lolium perenne*, *Poa pratensis*, and *Hordeum pratense* constituted an equally large proportion, the *lolium* in particular, with the exception of it, the others grew in a very tufted manner. That rare grass, the *Festuca loliacea*, grew in clumps in damp places near the margins of the open water cuts. It is very rare to see the *Hordeum* in such abundance; in many places it is almost the sole grass. The other grasses I have named are found in an extremely small proportion; the very small portion of clovers existed with difficulty in the bottom of the luxuriant crop.

The management of any arable land in the immediate vicinity is wretched in the extreme. Ridges thrown high in the middle, then hollow in the sides, and high again towards the furrow; furrows laid at unequal heights, and the plough held deep when approaching the turning at the end of the ridge, and held shallow when entering on the opposite side, thus making a high and a low side—all show to the experienced eye a lamentable want of skill, and would nearly persuade one it had been performed by some pastrycook from Ludgate Hill. It may very truly be styled “Cockney ploughing!”

RUSTICUS.

ON BREEDING SHEEP.

TO JOHN ELLMAN, ESQ.

SIR,—I am a constant reader of the *Mark Lane Express*, but being from home I did not meet with the one of the 7th inst. until this day, wherein you address a letter to the Rt. Hon. Lord Western, relative to a new breed of sheep: the part of that letter which it would be exceeding useful to have explained is the following:—

“Forty years ago my late father bred his rams too fine for the present day; then it was necessary to coun-

teract the coarseness of the Downs; but now the case is different, and to any gentlemen who may think he must go into Hampshire to get strength of constitution, I shall be most happy to show him my sheep, bred without Hampshire cross, that he may judge for himself.”

Now you would confer a great benefit on all breeders of sheep, and to myself in particular, to answer the following questions:—

1st. By what means your father obtained his rams too fine for the present day?

2nd. As it was necessary to correct the coarseness of the Downs, what cross was used for that purpose?

Your reply to these questions might throw a great light with respect to raising a new breed of sheep.

A FRIEND TO IMPROVEMENT.

Brighton, Jan. 14, 1839.

WALTHAM AGRICULTURAL ASSOCIATION.

The annual show of hunting horses of the above society was held in Croxton Park, on Monday, the 7th Jan., when the following liberal prizes were awarded:—To Mr. Hallam, of Tithby, Notts, for the best four year old hunting horse, 20*l.*, and 5*l.* for being the breeder of the same; to Mr. March, of Wartnaby, near Melton Mowbray (second best), 15*l.*; to Mr. Chamberlin, of Westley, near Grantham (third best), 10*l.*

CLASS II.

To Mr. Hallam, of Tithby, for the best three year old hunting horse, 15*l.*; to Mr. Hoe, of Long Clamson, near Melton Mowbray (second best), 10*l.*

CLASS III.

To Mr. Rose, of Cotham, Notts, for the best brood mare, 20*l.*; to Mr. Pinder, of Banowby, near Grantham (second best), 15*l.*; to Mr. Adcock, of Oakham, Rutland (third best), 10*l.* The judges on the occasion were the Marquis of Granby, Lord Forester, and the Hon. C. S. Wortley, to whom the society are much indebted for the anxiety and interest displayed by them in awarding the premiums, which gave general satisfaction to all parties. Notwithstanding the boisterous state of the weather, an immense concourse of both horse and foot people were brought together. Among the distinguished persons present were—His Royal Highness the Duke of Cambridge, the Duke of Rutland. Lord Bloomfield, Lord F. Somerset, Lord Burghersh, Lord Howth, Lord C. Manners, Lord G. Manners, Sir Robert Peel, Sir F. French, Sir Alex. Grant, Sir James Musgrave, Sir Dav. Baird, Hon. Mr. Pierpont, Hon. W. Bathurst, Baron Kneswick, J. Irvine, Esq., M. P., A. Drummond, Esq., C. Turner Esq., G. Gregory, Esq., C. Croker, Esq., &c., &c. It may be worthy of remark to observe, that the above society, which has been established but four years, have yearly funds to the amount of 100*l.*, which is almost unprecedented in the annals of agricultural societies. The society give premiums to a large amount to farming stock, exclusively of the breeding class, at their Oct. meeting, besides liberal premiums to all descriptions of ploughmen.

From the sudden rise of the society to such an extent, it was found necessary to build a room in which to hold their meetings; in consequence of which his Grace the Duke of Rutland gave the princely donation of 200*l.* towards accomplishing their object, with which, by an additional subscription from the farmers and graziers of the neighbourhood, they have been enabled to build a handsome and commodious room, capable of dining 250 persons, which they call the “Waltham Agricultural Hall.” There can be no doubt that agricultural societies, conducted on similar principles, will prove eventually of great benefit to the country at large.

ON THE DRILL SYSTEM, &c. &c.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—Your paper of 26th ult. did not arrive here until the week following its publication, consequently, I did not see your account of the Preston meeting until it had been some time before the public; I find that one of their subjects for discussion was on the comparative merits of the drill and broadcast system, as a general practice in sowing agricultural seeds; and that Mr. Binns, of Lancaster, detailed at considerable length his opinions on the question;—he enumerated several positions to elucidate the subject, and contended in all of them for the superiority of the drill over broadcast, not only for turnips, potatoes, beans, &c., but also for wheat, barley, oats, and grass seeds; indeed, Mr. B. seems to think, and very obstinately too, that broadcast for every crop should be abandoned, for he says it is a disgrace to a civilized country, and fit only for barbarous times. These certainly are severe remarks, and will I believe, universally be thought so, not only by the farmers in Lancashire, but by the greater part of agriculturists throughout the whole country; because, I believe, that however convenient and proper it may be to drill certain crops, such as potatoes, turnips, mangel, beans, cabbages, &c., experience and general practice prove the drill not superior to broadcast for wheat, oats, barley, and grasses. It is somewhat amusing, when we reflect, how we farmers are to be enlightened and instructed by such men as Mr. Binns, certainly he can fairly claim some experience as a farmer, and agricultural information too, part of which he may have acquired by a proceeding which not many rent-paying farmers can afford—that is, travelling in different parts of the empire; and, I am greatly in error, if Mr. B.'s acquirements as an agriculturist have not cost him too much money, and that the results of his dexterity have to him been such as cannot recommend his practice to the adoption of a tenantry who have a rent and a livelihood to make by a farm.

Having made these few remarks, I shall review more in detail, some of the positions and principles advocated at the Preston Agricultural Meeting.

Mr. Binns says, land never requires rest, but change of crop, and adds, “whether a change is required, in consequence of the exhaustion of nutritive matter in the soil by the repetition of growth of one species of plant; or as some suppose, in consequence of a kind of excrementitious matter left, being injurious to the same plants when repeated; and is one of the investigations that well deserves the attention of the English Agricultural Society.” Now, Mr. Editor a great part of what I have here quoted from Mr. B.'s paper may sound well in the ears of gentlemen, who are ever ready to accuse the farmers of want of knowledge; and it may be no doubt, will be thought important by such—and there are many of them who are anxious to be regarded as men of scientific acquirements and philosophic research; yet will not be at the tedious and pains-taking perseverance, which is absolutely requisite for anything like proficiency in such attainments; but, however consequential it may be to such characters, or to such as went to see the mountain labour when it only brought forth a mouse, the question is, in my humble judgment, of little consequence so far as general information and useful agricultural skill is concerned; and if the English Agricultural Society makes no better use of its resources than pursuing, to practical men, such useless inquiries, the country, though so susceptible of improvement, will not be much ameliorated by that truly patriotic institution.

That even good land is exhausted, at all events ceases to grow good crops with ordinary cultivation, is a fact known, I should suppose to every individual who directly makes a livelihood from the soil, and the axiom is so universal, that I am astonished any one connected with rural management should hazard such a statement. A little more on the drill system as applied to growing wheat—we are told by Mr. Binns that in Norfolk seven qrs. will be produced on an acre—the statute acre I presume; he says this is 26 loads to the Lancashire, but

he does not inform us, what weight, or measure constitutes the load—and I believe the load of wheat is not the same weight throughout the county; however, I have known upwards of 7000 lbs. of marketable wheat grown on a Cheshire acre,* 6000 lbs. are frequently grown on the same breadth, both in Lancashire and Cheshire. These are broadcast crops, and I beg to ask Mr. Binns, who is disgraced by them, or can he adduce instances of better? I have no doubt but good crops of wheat may be grown in the drill, but, if that had been so superior to broadcast, as Mr. B. in the most unqualified terms asserts—surely the farmers of England have been stupid, as many Solomons suppose them to be, or they long since would have seen the superlative excellence of the practice.

Mr. B. says, he cannot help characterising broadcast as a slovenly and lazy practice. “If,” says he, “manufacturers adopted such plans they would be ruined in a month, but they know better how to apply labour and power.” With due deference to Mr. B.'s opinion of farmers, I would recommend that gentleman to view some farms in the neighbourhood of Manchester, I beg to enumerate some of them:—Mr. Marslands, Bagaly Hall; Mr. Marslands, Sali Hall; Mr. Deans, Barlow Hall. I could count many others all excellent practical men, and renters of land, none of them grow either wheat, barley, oats, or beans in the drill, yet the inspectors for the Liverpool Society declared at their last annual meeting—some holdings were even more like a well ordered garden than a farm, so clean, so neat, and free from weeds.

The comparison drawn by Mr. B. in favour of manufacturers, as having better understanding, and more knowledge of their respective callings than farmers have of agriculture, will not abide a candid and fair inquiry; does not Mr. B. know that the operations of the manufacturer are wholly guided by artificial power. The temperature of their rooms—let us call them their fields, can be made the same at Christmas as Midsummer, neither wind nor rain obstructs their movements; when the manufacturer buys cotton at Liverpool, he can tell to an hour when the same raw material will be printed, or finished goods, and also when he shall offer them in the market;—it is not so with the farmer, he may do all to obtain a good crop that the ingenuity of man suggests, and still be disappointed, particularly on some soils and situations. The success of his endeavours in a great measure depends on causes over which he has no controul—the accidents which interfere with his efforts are many, and at times seem to set human ingenuity at defiance; to prevent smut, mildew, and innumerable small insects, which sometimes do serious damage to our crops, are subjects which always command more or less the attention of practical men; and at times, for a long period back, the same have occasionally engaged the most brilliant talent, not only in this country, but also on the continent, yet these serious maladies, these destroying agents are neither perfectly understood, nor apparently within the scope of human sagacity to entirely avert.

Have the manufacturers any such difficulties to contend with? I say they have not. Any sort of man, provided he is sufficiently endowed with the keen and over-reach, will do for a merchant or manufacturer; no man can make a livelihood, bring up, and educate a family by farming, unless he pursues the strictest economy, and the most persevering industry. I have known many farmers turn merchants or manufacturers, and soon get rich, even persons who from being paupers, in little more than twenty years amass a considerable fortune. Within my immediate neighbourhood the cases are almost innumerable, of individuals—petty tradesmen—such as shop-keepers, hawkers, publicans, &c., men of no education, who can scarcely write their own names, and with little capital, have within the last fifteen years engaged in the cotton-spinning, and power-loom manufactures. Most of them have lived far more expensively than farmers, nevertheless, have accumulated more wealth than an industrious farmer could have done on a moderate sized farm, supposing him not to have any had rent to pay.

* The Cheshire acre is eight yards to the rood.

I find no fault on that account, I like to see my country thrive, but it grieves me to see so little gratitude, even in well doing, for many of these very individuals are continually railing against the landed interest. What will Mr. B. reply to this, he cannot contradict what is here stated, I should not have been so far particular; my policy is conciliation, but we farmers are assailed from all sides with charges of ignorance, stupidity, laziness, and lethargy. I have said my policy is conciliation, and most sincerely it is so, I have merely shewn something of the chances of agricultural and commercial interests; still I do not like to see or hear the class, of which I am one, calumniated—a class which, with all their faults, pay the public and private creditor the best, are always ready to communicate their knowledge one to another, and by that means—advantage the public; have no notices on their farms *admittance only on business*—are the most candid, the most industrious, moral, and truly liberal of any in her Majesty's dominions.

That merchants, certainly mechanics, too, have some advantages for reading in public libraries, and for hearing public lectures; but, do these advantages make them better members of society, or more understanding in their business than farmers and farm labourers—if they are so, my observation has been to some extent thrown away. I presume to know something of the character and habits of the population in manufacturing towns and villages—their reading ten to one is politics of the lowest grade—of the most extreme, pernicious, and destructive tendency. In all ages of the world the masses must be labourers; let an operative turn politician, his peace, his quiet are destroyed. True, he may obtain some information, yet to him and his family, should he have one, it is worse than ignorance. “Acquired ignorance,” says Mr. Addison, “is a greater evil than natural.” A friend of mine, whose business occasionally leads him into the agricultural districts, informs me that the moral principles of farm labourers are far superior to those of mechanics, or workmen connected with manufacturing establishments. My friend is in the leather trade, he says, he is almost certain of having his accounts duly paid by the shoemakers in rural districts, because farm operatives, though perhaps not earning more than ten or twelve shillings a week, pay for their shoes punctually, it is quite the reverse in manufacturing localities—the shoemakers there, or very few of them, will he credit, not so much for their own dishonesty as that of their customers. Though earning double the wages of farming men, many of them get as much as possible without paying for it, they run into debt, and think it not at all disreputable.

A manufacturer, though he may have what is called a better address, he may be a greater adept in those arts by which men often deceive one another than a farmer, still, it is no proof of more varied knowledge: call many of them out of their daily beaten tract and you will find them just cyphers.

The difference between farm labour and mechanical employments has been well described by a most sagacious writer of the last century. “The common ploughman,” says he, “though generally regarded as a pattern of stupidity and ignorance, is seldom defective in judgment and discretion, he is less accustomed indeed to social intercourse than the mechanic, who lives in a town, his voice and language are more uncouth, and more difficult to be understood by those who are not used to them; his understanding, however, being accustomed to consider a greater variety of objects, is generally much superior to that of the other, whose whole attention from morning till night is commonly occupied in performing one or two very simple operations.

Mr. Binns says, let us shake off the lethargy with which we are justly charged, and be determined as well as we can to keep pace with the manufacturer. Now, Mr. Editor, this cant I have often heard and read, but the gentlemen who seem so anxious for our instruction, never say in what we are behind—will any of these gratuitous teachers assert that more weighty crops can be raised on a given space than have ever yet been produced. I contend there never will, until that day, if ever it arrives, when corn is grown by steam-engines, or some great revolution in nature enriches our soils,

and at the same time ameliorates the temperature of our climate. Charge the farmers of this country with lethargy indeed! who will gainsay, that as a class they are the most industrious, frugal and persevering? perhaps in some degree so of necessity; their work must be done, no shirking of it, when the seed is sown, no one can tell at what period the crop will be ready for the sickle. So far, I confess, we are behind the manufacturers, for we cannot raise at pleasure the temperature of our fields, nor speed the seasons with the same facility as a power-loom, or a spinning jenny.

Mr. B. says, farming is only in embryo, and adds “I hope it is now being called into existence;” if this is true, obtuse indeed must have been the understandings of the cultivators of the earth for these many thousand years; an art the most ancient,—I think the most honourable, certainly the most indispensable;—an art, which must be coeval with the creation of our species, still only in embryo; if Mr. B. had steered the plough and worked as many, I will not say toilsome days, with the spade, for they were cheerful days to me, and in the evenings of those days read as many books on agricultural subjects, he would not have ventured such a statement; however, let it not be supposed that I contend there is no more room for improvement,—no, no, the capabilities of our country have been as yet fairly tested to a limited extent only, and miserable will be the lot of that humanity which people this now favoured soil at that stationary and dull period which will inevitably soon follow, when to the fullest extent the powers of the soils of this empire have been developed, but sufficient is the evil for the day, it is of no use calculating on contingencies which will never happen to us. Agriculture is now fast improving in a pace accelerated as any other branch of our national industry, according to its nature and immediate available resources. Empty sacks cannot stand upright. Only let us have remunerating prices, and like true patriots the farmers will shew their gratitude by improving their country.

Nothing national could have afforded me more solid satisfaction than the establishment of the English agricultural Society; no humble individual can be more sanguine as to its beneficial tendency and consequences, but I confess at the same time, that my hopes of improvement from mere discoveries are nothing, compared with what may be done, and I believe will be achieved, by a careful, a judicious, and spirited application, and extension of those principles which are already understood.

History informs us that civilized society in every age and nation has had its peculiar tastes, perceptions, prejudices, and dispositions; these sometimes may have arisen perhaps from trivial and accidental circumstances, but when a national institution is established for the most laudable and advantageous of purposes, and enlists in its support a great portion of the talent, rank, and wealth of the country, we may have some idea of the sphere of its action, but no conception of its vast usefulness. What then may we not fairly expect from the English Agricultural Society; may we not anticipate that the proprietary generally will direct their attention to improving their estates, and divert their minds from those expensive hunting establishments, those ruining racing studs, which have brought many ancient family properties to be praised by George Robins. How hurtful it is to every Englishman who loves his country, who admires her ancient institutions, her ancient families and hereditary distinctions, to see goodly estates sold, and the axe laid to the roots of fine timber, for no better purpose than to pay for past vices, or some contemplated follies. Would it not be well in this age to inculcate more forcibly that useful maxim “want of care ruins more than want of knowledge?”

Scarcely an agricultural meeting takes place, but noblemen and gentlemen confess how little they are acquainted with rural matters; certainly this is candid, and we may hope for improvement from the acknowledgment; but from many land stewards and land agents we can have no such expectation, three out of

every four of that body I ever yet met with are perfect nonentities as agriculturists, not having the ingeniousness of their masters, for they absolutely affect to instruct the farmers, when 'tis two to one if they know any thing either of the theory or practice of farming; most of them are great men only in the bar parlour of some inn, or at an ordinary on market days; at these places not discussing agricultural subjects, but horses, dogs, hunting, and shooting. In a late agricultural meeting, at which I was present, one of these pretending gents said that farmers were thankful for any advice given them, and from what he advanced a stranger, if not an agriculturist, would have been led to suppose him to have been most useful for giving agricultural instruction, for in a most imposing attitude he declared that he had never read any publication which correctly detailed one important branch of rural management (draining), yet after all this, what will many of your readers think, Mr. Editor, to be informed that this teacher had for a few years only been connected with landed property in any capacity that could give him an opportunity of knowing the business, and even before he was so connected, he had passed nearly five times seven years of his life.

Now if that gentleman had such a box of knowledge as he affected to shew was in his possession, he would have known so much of the infirmities of mankind, to have known also that we farmers sometimes hear with seeming attention, the agent's knowledge of agriculture, when at the very time we are coxsure that he could not pay a fair rent for any farm.

Let us just suppose that gentleman to have been asked what authors he had read; would he have enumerated a formidable array of agricultural talent? No. Suppose he had been questioned as to extent of land he had operated on in the capacity of improver, could he have named even a tract of a few acres? No. Away then with so much pretension and presumption, away with so little candour and common sense.

Let the English Agricultural Society establish a board of examiners, let it be constituted of such men as Mr. Blacker, agent to Lord Gosford; of such men, Mr. Editor, as your talented and clear-headed correspondent the *Scotch Farmer*, Mr. Rothwell, of Winwick, in this county, Mr. C. Hillyard, the Messrs. Ellmann, and many others who might be named. The board ought not to be less in number than twenty-four, and from different parts of the empire, all of them gentlemen of great experience, who early in life began the study and practice of agriculture. Such only as have a high tone, not of arrogant, but truly gentlemanly feeling, in connection with a theoretical and practical acquaintance with their profession in all its various details, of the nature and properties of soils, and the means of improving their constitutional defects; it would be indispensable also that such a board should collectively understand all the modes of draining as best adapted to different soils in different situations, and under all circumstances.

A board of examination being established, it might assemble for a certain period in every year, and every gentleman aspiring to the situation of taking charge of landed property, ought to go before that board, there be questioned as to his aptitude for such an office, and receive such credentials and testimonials, as his general information and agricultural attainments could command. This being the case it is but natural to suppose that all noblemen or gentlemen who were anxious to have their property and affairs conducted in a business like manner, would in the event of requiring assistance, avail themselves of such efficient, and fully acknowledged ability, in preference to recommendations, which probably have nothing better for their support, than that the party could not maintain a respectable position in fair competition with the world.

Then would agriculture thrive, then would the owners and cultivators of the soil, firmly, and extensively command that situation, which they have a right to maintain; but in which I fear they are losing ground, mainly from their own inattention, and in part, from the persevering agitation of a class, whose

interest. Dr. Adam Smith declares to be, "never exactly with that of the public, who have generally an interest to deceive and even oppress the public, and who accordingly, have upon many occasions, both deceived and oppressed it."

I am, sir, yours' respectfully,
A LANCASHIRE AGRICULTURIST, AND
RENT-PAYING FARMER.

December.

THE ENGLISH AGRICULTURAL SOCIETY AND THE VETERINARY COLLEGE.

(FROM THE VETERINARIAN.)

On the 18th ult. the half-yearly meeting of the English Agricultural Society was held. The rooms were crowded. The most perfect harmony prevailed, and every one seemed to feel assured that the important objects of that society will, at no great distance of time, be fully accomplished. We subjoin that portion of the "Report" which had reference to us.

"Aware of the immense loss sustained in consequence of the want of better knowledge in the treatment of the diseases of cattle, sheep, and pigs, the attention of the Committee has been turned to this subject, in order, if possible, to devise means for supplying the deficiency. A veterinary school has long been established in the neighbourhood of the metropolis, and it has been most useful in teaching the scientific and successful treatment of the diseases by which thousands of horses used to be destroyed; but its attention has been almost exclusively devoted to the horse. It was, therefore, considered that if its labours could be directed with the same success to the management, in health and disease, of our cattle and sheep, it would be of inestimable advantage to the British farmer.

"Application has been made to the Governors of the Veterinary College, stating the anxious wish of the English Agricultural Society, that this most important extension of its inquiries and its benefits should take place, this Society not interfering with the arrangements or proceedings of the Governors of the College, but contributing from its funds to the accomplishment of this purpose.

"A most favourable answer has been received from some of the Governors, and a meeting will soon take place between them and a delegation of your Committee, from which the happiest result may be anticipated."

We trust that the ultimate result will be a happy one; but the question will be as to time and arrangements. It will not be the fault of the Society if the time is not almost immediate; and the arrangements such as to gratify every one who wishes well to the St Pancras School, and to the veterinary art.

They who are at the head of the Agricultural Society—the moving powers of it—are well aware of the magnitude of the object which they have pledged themselves to accomplish; they are aware of their responsibility to the whole agricultural body, and to their country; and they will do their duty.

They will fully accomplish their object!—at the St. Pancras School if they can. There they would rejoice to accomplish it. We trust that no delusive plans will be proposed—no half measures attempted; but that with good faith, and the kindest feelings, all parties will unite.

We were much gratified to hear Mr. Sewell, at the close of his introductory lecture, in November last, express himself so warmly and so properly with regard to this most desirable extension of the students' education. He spoke of the hope with which the agriculturist was inspired, that the benefits of our art would be extended to every animal that formed a part of the wealth of the farmer and of the country. He alluded to the circumstances which, without much impeachment of industry or good intention had prevented the full work-

ing out of the plan of the founders of the Veterinary College, but which should no longer exert any baneful influence, or, indeed, have existence. He placed the question on its proper grounds, the interests of the agriculturist and the country, the claims of humanity, and the honour of the veterinary profession. He expressed himself willing to contribute, to the full extent of his power, to the accomplishment of what now appeared to be the general wish, the general demand.

This was as it should be. The Professors and the Governors of the Veterinary College may be assured, and, we trust, are beginning to see, that every branch of veterinary instruction must now be placed on its true level. No portion must be omitted—no portion considered as merely subsidiary to others—glanced at, now and then, and that somewhat too rapidly, and then heard no more of for weeks. Each must occupy its full time—each must receive its full and due attention. If the avocations of the present Professors will not admit of this, others must be added. And is there any thing unreasonable in this? Ours has been the only school in which the instruction of the pupil has been thus confined: ours is the only school that has but one professor, and an assistant-professor. Look at the medical schools around us—look at the veterinary schools in every country in Europe. Four, five, six talented men are, in all of them, employed in preparing the student for the efficient exercise of his profession. Where is the reason that, in Great Britain alone, unrivalled for its horses, its cattle, and its sheep, the veterinary student should be more inefficiently taught than in any other country in the world? Common sense, common justice, and common interest will now unite many honourable minds in commencing that career of improvement which will gradually, cautiously, and in good faith be pursued until the reputation and honour of the practitioner, and the peculiar interests of the farmer, are secured.

THE BEDFORDSHIRE REPORTER, IN REPLY TO SIR THOMAS LETH- BRIDGE'S LETTER ON THE CORN LAWS.

MR. EDITOR,—Every true friend of his country will at once admit that the subject on which the worthy Baronet has addressed his brother landowners and occupiers, is of the highest importance to all classes of the community; and it must also be admitted that, whether we bear in mind the high station and character of the author, or the temper and spirit in which he has written, that is justly entitled to the most candid and dispassionate consideration. While, then, we are quite disposed to approach the subject in the same good temper as that in which the Honourable Baronet has written, it would be absurd in us to deny, that we consider his conclusion to be totally at variance with the premises he has laid down, and that it is far too evident, and much to be regretted, that the corn question is not treated so much upon its own abstract merits, as it is viewed throughout through the distorted medium of *free trade*, and it seems (according to Sir Thomas) that to *this goddess* (whether right or wrong) every creature in the country must ere long bow the knee. It is quite impracticable, however, in the space of a letter to quote the exact words of the Hon. Baronet at any great length, but we pledge ourselves not intentionally to misrepresent him; and we bear in mind that pledge, when we say that it must be manifest to all, that the scope and design of the above letter is to hold up the present corn laws to odium in the country, to show that they are *justly obnoxious* to the great mass of the people, and that though intended to protect the agricultural interest, they totally fail in accomplishing that object; and, moreover, that they ought forthwith to be repealed; “(and if any regulation is necessary) that corn ought at all times to come into our mar-

kets and be sold (whether wanted or not) at a duty of from 8s. to 10s. per quarter.”

Now, we call upon every candid reader particularly to notice the very extraordinary (and to us most astonishing) arguments by which the Hon. Baronet arrives at that conclusion. “I further beg to remark (says he) that the market prices of all kind of grain, since the last law was passed in 1827 or 1828, will show that the home grower has not been receiving a larger price than would just remunerate him for his skill, toil and capital employed in cultivation of his land; and that *now*, when the prices are rising, owing to a small and inefficient supply from abroad, added to a deficient crop both of corn and potatoes at home, that he is by no means receiving an exorbitant rate of profit.” Well, then (and we appeal fearlessly to every impartial reader, whether the legitimate conclusion would not be, *that therefore you cannot (unless you lessen the expence of cultivation) justly adopt any measure that would lower the price of British grain.* But, no! in the very teeth of these arguments (surpassing strange as it must appear) Sir Thomas implores the landowners and occupiers of West Somerset to join him in obtaining the repeal of these laws, and why? Why, not because the people have been too dearly fed under these laws, for he admits, “at no one time have the farmers’ profits been exorbitant,” but, forsooth, because where the people move in masses they have taken an odd fancy to quarrel with their best friends, those who feed them, and vainly imagine that they have only to ruin them, in order to complete their own sum of prosperity. But, we complain not merely at the unaccountable manner in which the Hon. Baronet arrives at his conclusions, but in his fruitless attempt to please both parties he is compelled to blow hot and cold with the same breath, for after telling the farmers that they cannot afford the corn cheaper than under the present corn laws; yet he panders to the fullest extent to the popular feeling—“that the people have an undoubted right (at whatever cost to the other interests of the country) to purchase their grain at all times where they can get it cheapest.” It is this seeming to side with the hare, and at the same time running with the hounds that we most complain of. In fact, it is impossible to tell what the Hon. Baronets wants, except (at all risks) he wants a change,—whether it be *higher prices, or lower prices, or steadier prices*, it is impossible exactly to gather. Now, if he wants higher prices, he must know that the party who are clamouring for alteration would be greatly deceived. If he want lower prices then, with all our good opinion of the Hon. Baronet, we can hardly acquit him of insincerity, when he says, “That the farmers, under the present laws, have only just been remunerated for their skill, toil, &c.” Now, the facts of the case are simply these; for the first four years after passing the present law, imposing graduated duties, the British farmers did obtain upon the average within a mere fraction of 8s. per bush. for their wheat. This, however, was during years when the crops were not abundant at home, but when we required some foreign aid; for the next five or six years, having a succession of favourable seasons, the price was much lower, and during which time we had scarcely any foreign grain in the market; what little there was, however, paid heavy duties; and we appeal not merely to Sir Thomas Lethbridge but to every sensible man in the kingdom, *whether, during those years of plenty, if foreign wheat had been all along admissible on payment of eight or ten shillings per quarter duty, as he recommends; whether prices must not have fallen much lower, and that the ruin from which the English farmers hardly expected with closed ports, must not have been inevitable.* If, however (as we would charitably hope), the hon. bart. really wants a steadier price for wheat, we tell him at once, that his plan would be totally abortive in accomplishing that object. In fact, with all the absurd and unmeaning clamour that is raised against the present corn laws, it is not a little marvellous, that during the eleven years of their operation prices have varied less than in almost any other period of the like extent in the history of this kingdom; certainly much less than during any such time of peace: and we challenge contradiction upon this point. That corn, how-

ever, from the general defalcation of crop, is gone up in price just now, is not to be wondered at, and we have no hesitation in saying, that adopt what measures you will to prevent fluctuation in an article so entirely dependent upon the seasons, the history of all ages and all nations shows that the object can never be effected. We demur also entirely to the hon. bart.'s views, when he says, "That because the Almighty ruler of the universe has cast up his great watery highway for the interchange of the commodities of the earth, *that we must take articles when we do not want them, or else that we have no right to expect them when we do want them.*" This hypothesis is in fact totally at variance with the universal practice of mankind in the common affairs of life. Take a case in point. We are now shipping potatoes to America; but let Brother Jonathan only get another good crop at home, and then, though never so good an Irishman should go with his cargo and stand on the shores of the great Atlantic, and should swear by Jasus and the Virgin Mary, that he would never bring them another tater if they did not buy his cargo, and what, we ask, would Brother Jonathan care for all this bluster? Equally preposterous is it to wish to feed the British people with foreign wheat, when we can accomplish that object at reasonable prices with the produce of our own lands; and so judicious in principle are our present corn laws, and so nicely are the scales of justice balanced, that we no sooner imagine that foreign aid will be necessary, than we begin to remit our duties, till at length our wants increase, we open our unrestricted ports to the whole world. In common fairness, however (for we do not seek to triumph at the expense of truth), there is one point in the letter of the hon. bart. which is not without some force. In the working of the present system, *the great Leviathans in the corn trade have at certain times too much command of prices.* This, however, is not at all attributable to the *principle of the law*, but to its details, and we have long thought that the duty rising and falling so rapidly at the lower end of the scale, is too much favouring a gambling sort of speculation in corn; and by which means, it is too evident, the Government is defrauded of much revenue. This might be remedied by merely allowing the duty to advance or recede in equal proportions at all points of the scale (and we should say one shilling per qr. as the price varied to the same amount in the market). By this simple adjustment, the present great incentives to influence the averages by artificial excitement would be effectually removed, and the Government would secure a revenue *at all times, when from the low price of British grain, foreign ought to pay duty.* And we believe we speak the sentiments of all who are worth consulting of our agricultural body, when we say, that if, by the alteration of the poor laws and other improvements, it can be shown that the expenses of cultivation has lessened since 1828, that with perfect good will they would be willing to give the consumers the benefit of such improvements in the scale of duties. We do not ask, however, for alteration.

We cannot, however, close our observations without entering our solemn protest against the wild and visionary scheme of the hon. bart., of opening our ports at all times to foreign grain, on payment of a fixed duty. And we protest against the measure for the following reasons:—First, because wheat being the great leading article of human consumption, and from the unalterable nature of things, being always subject to great fluctuations, it cannot with safety be subjected to the same fixed principles as other articles of commerce.

Secondly. Because, therefore, if a fixed duty were imposed on the article of wheat, bearing any just proportion to the difference in the cost of production in this highly-taxed country, and other states dissimilarly circumstanced, that from the sensitiveness of the people in an article of this importance, there must of necessity be frequent infractions of the law, and that such infractions would often be ruinous to the dealers in home grown corn, and consequently lessen confidence in society at large.

Thirdly. Because on the average of eleven years, during which the present system of graduated duties

has been in operation, the people of this country have been fed at a cheaper rate than during any former period of the same extent within the last 40 or 50 years, and therefore that no case whatever is made out for altering the principle of the law.

Finally. We protest against such alteration, because the great probability is, that much greater fluctuations in price would be the consequence. The early effects would be to discourage our own rising agriculture, which must result in the poorer light soils reverting back to mere downs and sheep walks, while much heavy land of costly cultivation would go to grass, and then our people becoming every year more and more dependent for food upon foreign countries, in the event of those supplies being cut off by war and other contingencies, we might ere long witness the teeming population of our great mercantile and manufacturing towns with famine at their doors, bitterly reproaching themselves for their present folly, and cursing the day when they had been tempted to discourage the agriculture of their own country. For these considerations, as well as all others important and dear to the United Kingdom, we implore every true patriot through the length and breadth of the land, not to sanction the doubtless well intended, but very mischievous, suggestions of Sir Thomas Lethbridge.

Yours, as ever,

THE BEDFORDSHIRE REPORTER.

P.S. Though we assume a signature by which we are not exactly personated, we can assure you, Mr. Editor, it is not because we seek an unmanly mode of attack, for we have no interest to serve but that of the public, and you are quite at liberty to give the hon. baronet our real address as soon as you please; but we do so merely to screen our pocket from a heavy taxation, such as we have formerly suffered from some paltry anonymous scribblers of the anti-corn law associations.

ON FARMING ACCOUNTS.

It is passing strange, but no less strange than true, that in none of the schools at which farmers' sons are educated is attention given to any subject bearing upon the pursuits to which the youths are afterwards destined to devote themselves. There is one subject, fraught with the most vital importance to the interest of the farmer, and the neglect of which seldom fails to prove fatal to the tradesman, but which is generally managed by farmers in the most slovenly manner, and we fear, in too many instances, not attended to at all, namely, the keeping of accounts. However difficult it may be for the masters of schools to devise a useful plan of general agricultural education, there can be no difficulty in teaching a system of accounts adapted to the management of the farm. Various forms have been published for the use of farmers, but none which we have seen equals, in simplicity and comprehensiveness, the "British Farmers' Annual Account Book," by the author of "British Husbandry." This account Book is now announced a second year, and will, if its merits are properly appreciated, meet an increased demand.

The advantages which youths, instructed in a good system of farming accounts must enjoy, could not, we should think, fail to bring into notice any school in which such instruction was judiciously given; but if this were doubted, we feel persuaded that it is a subject well worthy the attention of agricultural societies, and deserving encouragement by rewards of some kind.

TO THE RIGHT HON. LORD WESTERN.

Glynde, Dec. 26.

MY LORD,—If your lordship thought it necessary to make any apology lest the charge of presumption should attach to you for bringing before the public the interesting experiment made in endeavouring to raise a new breed of sheep, how much more incumbent is it on a humble individual like myself to do so. But, considering the subject to be one of great importance, I fearlessly take my pen in hand, from a consciousness that my only motive is the public good.

In common with other breeders and graziers who attended the late Smithfield Show, my attention was drawn to the two pens of wethers sent by your lordship; but from the crowded state of the yard, and the dark stable in which they were put, in common with many other excellent animals, there was great difficulty in finding them out.

Having had the pleasure of being at Felix Hall last year, I was quite prepared to see a *really well made carcass, with very good wool*—and I was not disappointed. I will not compare them as to frame with the capital Southdown wethers shown by the Duke of Richmond, or the beautiful Leicester ewe of the Marquis of Exeter, both of which were placed near your wethers, and to both of which prizes were most justly awarded as Extra Stock. But, recollecting what Merinoes were twenty years ago, nay, what the Southdowns were thirty years since, I have no hesitation in giving, as my opinion, that they may be called well made sheep.

I am quite aware that it is a received opinion amongst all our first-rate breeders of cattle and sheep, that the first cross generally succeeds, but that if you attempt to go on with the cross, you will breed very inferior animals, and, indeed, that it is impossible to carry it on. I am not of that opinion. I am quite aware of the *unceasing* attention and great skill it will require to counteract the great difficulties to be encountered; but I do not think them *insurmountable*. Recollecting those who have most distinguished themselves in such matters, my mind naturally reverts to my late father's old and highly-valued friend Sir John Sebright; and were any young man to undertake it with the zeal and perseverance of that hon. baronet I believe he would succeed.

It is of course needless to state that there is no natural impediment—all sheep must have originally sprung from the pair in the ark; their power of procreation beyond the first cross proves this. What can be more dissimilar than the Merino, as in Spain, and the new Leicester? Climate has no doubt had considerable effect, but the different views in breeding the respective animals much more. In Spain the wool only was thought of; with the Leicester breeders that formed very little part of their system; indeed I have often heard my father say, that Bakewell (to whom the praise of first improving the frame of sheep must be universally allowed) told him, on his suggesting to him that he neglected the wool, that he "would rather have a sheep with no wool at all."

Were I a younger man, I would undertake to breed from many flocks on the Southdowns in twenty years a flock resembling Norfolks or Merinos in colour, whichever one might fancy. The Southdown breed of sheep are so much improved, even within the last twenty years, that the same wethers which gained the premium at the Smithfield show at that time would cut but a very indifferent figure now. Speaking of the Downs, your lordship notices the crossing with the Hampshire, as practised and recommended by Lord Leicester. I should be very sorry to say any thing to annoy that eminent patron of agriculture, to whom we are all so deeply indebted; but I have no hesitation in giving it as my firm conviction, that the noble lord might have obtained every good which he expected from the Hants, without the bad, had he come into Sussex to renovate his flock. The fact is, the Southdowns at Holkham were bred under a Leicester hand, and although excellent in the chine, they lost very much the original character of Southdowns. They had too little wool, and too little lean—faults which some years since many of the highest

bred Leicesters possessed. Forty years ago my late father bred his rams too fine for the present day; then it was necessary to do so to counteract the coarseness of the Downs; but now the case is different, and to any gentlemen who may think he must go into Hampshire to get strength of constitution, I shall be most happy to show him my sheep, bred without Hampshire cross, that he may judge for himself.

I am, Sir, your obedient servant,

JOHN ELLMAN.

RENT DAY AT DRAYCOTT, STAFFORDSHIRE.

PROPOSED FARMER'S LIBRARY, &c.

The rent-day meeting of the Draycott tenantry, held at the Draycott Arms Inn, on the 17th Dec., was numerously attended.

After the usual business of the morning, which proved most satisfactory to Mr. Bond, the agent of the property, the tenants and visitors sat down to a most excellent dinner, provided by Mr. Cope, the respectable landlord at the Draycott Arms.

After the removal of the cloth, Mr. BOND, the chairman, after given the Queen, and other loyal toasts, the Dowager Lady Stourton, the Hon. Sir E. M. Vavasour, Bart., and family, and other appropriate toasts, informed the tenantry that Sir E. M. Vavasour, in his desire on all occasions to serve them, had proposed to set on foot an agricultural library, and to contribute liberally thereto. In the course of Mr. Bond's observations, he called the attention of the tenantry to the advantage they would derive from a knowledge of the improvements of other counties, of the state of the markets, and a variety of valuable information relative to cattle, seeds, soils, and implements, which such works as the *Farmer's Magazine*, the *Mark Lane Express*, and other agricultural works contain. The tenants were highly gratified with the proposition, and unanimously agreed to come forward and each subscribe his share towards carrying so desirable an object into effect; and to meet on the 1st of January next, to further discuss the subject, draw up rules, and appoint officers.

Attention having been called to the manner in which the children of the poor were brought up, it was observed, that great inconvenience had resulted from the neglect to apprentice them at a proper age for a term of years, or even to engage them as hired servants for a single year; that hence, trusting in most cases to the chances of obtaining day labour, they were seldom in any settled employ, and that in the absence of proper control from masters and parents, they were in continual danger of contracting idle and disorderly habits. To remedy this evil, it was suggested that the influence possessed by the agent, in the disposal and improvement of the cottages, and that of the clergy, arising from the distribution of the charities of the family and the parish, might be exerted to induce parents to apprentice their children, or put them out to service, at a proper age. It was however urged that the old system of parish apprenticeship had operated injuriously on the interests of the poor, whose children had been apprenticed for too long a term, without adequate remuneration during the latter part of their term. To obviate this inconvenience, it was proposed and resolved, that the committee before appointed should sit at the beginning of each year, to determine what children ought to be put out to service, what wages should be given to each, and in cases of apprenticeship, what remission of the legal term of years should be recommended in recompense of industry and good conduct; and they should hear and examine complaints on either side. It was further resolved, that masters should allow the children in their service to attend to their religious duties and instructions; and also, at the proposal of one of the clergy present at the meeting, who kindly offered his services for the purpose, suffer them to attend school one evening in the week,

for instructions in reading and writing. Hope was expressed that, by these means, habits of virtue and industry might be implanted in the minds of the children, and that they might grow up good christians and useful members of society. The late alteration in the law of settlement made it, it was observed, more than ever the interest of the parish to guard against the danger of an idle and disorderly population.

The CHAIRMAN would venture to express his hope that they might be able to send three or four youths to Scotland, or some other improved district, to learn and bring home an improved system of agriculture.

In the course of the evening, Mr. BINNS, of Lancaster, the author of the work, "The Miseries and Beauties of Ireland," who was professionally engaged in valuing this, and some parishes in the neighbourhood, under the parochial assessment act, on his health being drunk, made many important observations on the state of the agriculture of the county, commenting upon the cumbersome waggons and wheel ploughs, and heavy and hairy legged horses; the ruinous practice of using three or four horses, one before the other, and two men in ploughing land, that would be better ploughed by two abreast and one man. He strongly recommended to the attention of the tenantry more care in their breed of cattle, by obtaining better males, being decidedly of opinion, which every day made more apparent, that there would be an increasing demand for the improved short-horned cattle both at home and abroad. On this part of the subject Mr. Binns observed—

"If I may take the liberty, I would recommend Sir Edward Vavasour and to his intelligent agent, to obtain two or three well-bred Durham bulls, for the use of the tenants, by which a great improvement in the stock might be effected in a short time. To the respectable tenantry, I will offer a remark or two, which I am confident will be accepted in the spirit in which they are made:—The institution of an agricultural library will be to you most beneficial, affording you a mass of useful information at a trifling cost. I would advise you to meet the views of Sir Edward most cordially, not only respecting the library, but in many other matters in which he has proved that he has your interest at heart; for when a landlord's advances are met by the tenant, in the disposition in which they are offered, they lead to further acts of liberality, promoting mutual good feeling between landlord and tenant, without which success cannot be insured." Mr. Binns, amongst further observations, recommended the attention of the tenantry to the keeping of cattle in summer, upon mown clover, tares, &c., in the yard or stall, in place of pasturing; relating successful experiments on this mode of keeping cattle, whereby more than double the number of cattle can be kept on the same ground, and the manure be preserved in the most profitable manner. He also hoped the time was no far distant when an agricultural society would be established, and ploughing matches become general in the county, which would do more towards correcting the imperfect and expensive system of ploughing than all the advice that could be given.

An animated discussion on these important subjects followed, which was kept up till a late hour, the tenantry being animated with a spirit of improvement which bids fair for future prosperity.

DISEASES OF HORSES.

GREASE is an undue secretion of the fluid which lubricates the heel; it is also altered in its properties.

SYMPTOMS.—Its first appearance is generally a dry and scurfy state of the skin of the heel, with redness, heat, and itching. The hind legs (which are most frequently attacked) begin to swell, a fluid exudes from the part, which gives a it greasy feel; the hairs of the heels become erect like bristles; soon after this cracks begin to appear across the heel, and they discharge a thick, offensive matter, and in dressing, this matter is of

so particular a fetid smell that to a practised person it is sufficient to denote the presence of the disease; the cracks and swellings then extend up the leg. In the course of time the skin becomes altered in structure; prominences, like bunches of grapes or a pine apple, appear; some of them bleed on being touched, whilst others appear quite horny; the constitution becomes affected from this extensive disease, and the horse becomes weak, lean and irritable, and instead of good matter being discharged, the before-mentioned fetid sores continue to drain from the heel.

CAUSES.—It was mentioned in a former paper that swelled legs may degenerate into grease. Some horses are more subject to it than others; for example, heavy draught horses that have no degree of breeding in them, particularly those having white legs, as this mark is supposed to indicate weakness of those parts. But bad stable management, as want of exercise; high feeding without a proper degree of work, is a very common cause of horses running into grease; deficient cleanliness; allowing the animal to stand in dung and urine which have not been removed from his stall; all these are very liable to be causes of the disease. Cold and moisture are conditions very favorable for the generation of the disease. Cold weakens the energy of a part, and suspends partially the circulation; and when this state has been induced, on the return of warmth, the circulation is increased, and the vessels weakened by the cold, are incapable of contracting on the increased quantity of blood which now fills them, and inflammation or some other disease is the consequence. Moisture is injurious on the same principle. Hence the impropriety of the practice of washing the feet and legs of horses on returning from work, or leaving them to dry as they may; if it is employed the feet should be carefully dried afterwards. Removing the hair from the heel is said by some to be a cause, and there has been some dispute whether it is or not; on the whole the removal has few or no bad effects. If space permitted it, numerous other instances might be brought forward, to show that grease is the offspring of mismanagement and negligence. Care and attention will do more for its prevention, than any other means we can adopt.—*The Yorkshireman.*

STATEMENT

OF THE EXPENCE OF STOCKING, OF THE ANNUAL DISBURSEMENTS, AND OF THE YEARLY RETURNS, ON A FARM OF 250 ACRES IN Ayrshire, IN SCOTLAND, UNDER A COURSE OF 4 YEARS, VIZ., FALLOW, WHEAT, CLOVER, OATS.

STOCK REQUIRED.

Eight horses, at 30 <i>l.</i>	£240	0	0
Four ploughs, at 4 <i>l.</i> , four pair of barrows, 3 <i>l.</i>	28	0	0
Harness & carts, at 15 <i>l.</i> per horse	120	0	0
Self-cleaning harrow	14	0	0
Roll and turnip sower.....	26	0	0
Threshing machine	50	0	0
Fanners, 6 <i>l.</i> , sacks, 4 <i>l.</i>	10	0	0
Weights and measures	10	0	0
Small implements	20	0	0
Four cows, at 10 <i>l.</i>	40	0	0
Dairy utensils	8	0	0
Three boilers 12 <i>l.</i> , chaff and potato cutters 6 <i>l.</i>	18	0	0
Cheese pressers	3	10	0

Permanent stock	£587	10	0
Manure 150 <i>l.</i> , lime 50 <i>l.</i> at entry..	200	0	0
Seed & labour on 150 acres, at 30 <i>s.</i>	225	0	0
Thirty cattle to feed, at 8 <i>l.</i>	240	0	0

£1,252 10 0

or 5*l.* per acre.

ANNUAL DISBURSEMENTS.

Four ploughmen, at 30 <i>l.</i> each	£120	0	0
Three labourers at 25 <i>l.</i> , two boys at 14 <i>l.</i>	103	0	0
Seventeen quarters of oats for each horse, at 17 <i>s.</i>	115	12	0
Three bolls of beans for do. at 20 <i>s.</i>	24	0	0
250 stone of hay for do., at 50 <i>s.</i> per 100 stone	50	0	0
Cut grass, at 1 <i>l.</i> per horse	8	0	0
Keep of four cows, four bolls of beans, at 20 <i>s.</i> , 4 <i>l.</i> , four bolls of potatoes, at 10 <i>s.</i> , 2 <i>l.</i> , & 200 <i>st.</i> of hay at 6 <i>d.</i> , 5 <i>l.</i>	11	0	0
Dairy maids' yearly wages	20	0	0
Hoeing and cleaning 25 acres of green crop, at 10 <i>s.</i>	12	10	0
Cutting and stacking 46 acres of hay, at 10 <i>s.</i>	23	0	0
Cutting 100 acres of wheat and oats, at 10 <i>s.</i> 6 <i>d.</i>	52	10	0
Stacking do. at 2 <i>s.</i>	10	0	0
25 qrs. of seed wheat, at 44 <i>s.</i>	55	0	0
300 bush. of seed oats, at 17 <i>s.</i> per quarter	31	17	6
Grass seeds for 50 acres, at 12 <i>s.</i> per acre	30	0	0
Seed potatoes for 12½ acres, 31¼ bolls, at 10 <i>s.</i>	15	12	6
Turnip seed for 12½ acres, at 3 <i>s.</i> . .	1	17	6
Taxes, tolls, and marketing	20	0	0
Blacksmith's bill 14 <i>l.</i> , saddler's 10 <i>l.</i> , wheelwright's 12 <i>l.</i>	36	0	0
Lime 50 <i>l.</i> , extra manure 30 <i>l.</i>	130	0	0

Expences of cultivation about 3 <i>l.</i> 9 <i>s.</i> per acre	£869	19	6
Rent of 250 acres at 36 <i>s.</i>	£450		
Interest on capital £1,252 10 <i>s.</i> at 4 per cent	50		
Interest on perishable stock, £587 10 <i>s.</i> at 7½ per cent. 44			
	£544—544	0	0

Total expenditure £1,413 19 6

YEARLY RETURNS OF SAID FARM.

62½ acres of wheat, 250 qrs. at 44 <i>s.</i>	£550	0	0
62½ do. of oats, 450 qrs., at 17 <i>s.</i> . .	382	10	0
31¼ do. of green crop, at 11 <i>l.</i> 4 <i>s.</i> . .	350	0	0
31¼ do. of fallow			
57½ do. of hay, at 200 <i>st.</i> per acre, at 50 <i>s.</i> per 100 <i>st.</i>	230	0	0
5 do. of grass for cows, at 10 <i>l.</i> per cow	50	0	0

250 Yearly produce	£1,562	10	0
Stock required on said farm in a six years course	£1,171		
Disbursements	1,358		
Returns	1,513		
Stock required on said farm in an eight years course	£1,156		
Disbursements	1,271		
Returns	1,431		

This statement was drawn up in 1836, when prices were very low. Circumstances will always make a difference in such estimates. The dairy system of farming is followed.

The only thing very deserving of observation is the sum (£130) allowed yearly for extraneous manure, in all situations where it can be got, and the allowance of seven men and two boys to cultivate a farm of 250 acres, thus showing what I

have often observed, that our northern cultivators apply labour and manuring, and draining, while in England we waste our time in speeches and useless meetings. They apply the known means, and place little reliance on scientific aid; we teaze our brains about applying chemistry, botany, geology, and mineralogy, and even astronomy, to assist us, and at the same time utterly neglect the means that are known. An allowance of 10*s.* an acre yearly for the purchase of manure, and the number of hands to work the farm, will startle many farmers; but how can money be raised from land without produce? and how can produce be got without cultivation? and how can cultivation be carried on without the means? To neglect, and even despise the known means of improvement, and at the same time to be perpetually meeting and discussing, and speechifying on the subject, without doing any thing, has ever appeared to me an anomaly not easily to be reconciled with the reasoning powers granted to man. But anomalies and incongruities seem intimately mingled up in our natural and social system, and farming has got a due share.

J. D.

Dec. 22, 1838.

SMITHFIELD SHOW.

A further account of the dead weight of the animals exhibited at the last Grand Show of the Smithfield Club:—

The Marquess of Tavistock's 4 years and 4 months old Hereford Ox, purchased by Mr. Druce, of Pitfield-street, weighed 210 stone, and had 28 stone of loose fat, exhibited in Class I.

The Right Hon. Charles Arbuthnot's 3 years and 10½ months old Durham Steer, purchased by Mr. Sharp, of Paddington, weighed 192 stone, and had 21 stone loose fat, exhibited in Class I.

Mr. Senior's 4 years and 9 months old Hereford Ox, shown in Class I, and purchased by Mr. Bellringer, of the Strand, weighed 182 stone, and had 24 stone of loose fat.

Mr. Rowland's 4 years and 10 months old Hereford Ox, shown in Class I, and purchased by Mr. Morton, of Great Bell Alley, City, weighed 212 stone, and had 27 stone loose fat.

Mr. Mack's 4 years and 10 months old Durham Ox, shown in Class I, and purchased by Mr. Richardson, of Kingsland, weighed 205 stone, and had 31 stone loose fat.

Mr. Seabrook's 4 years and 8 months old Durham Ox, shown in Class I, and purchased by Mr. Cooper, of Newport Market, weighed 212 stone, and had 20 stone loose fat.

His Grace the Duke of Norfolk's 5 years and 10 months old Sussex Ox, which was excluded from Class I in consequence of over-age, and was purchased by Mr. Smith, of Drummond-street, weighed 233 stone, and had 36 stone of loose fat.

Mr. Walker's 5 years and 9 months old Polled Ox, which was excluded from Class I, in consequence of over-age, purchased by Mr. Smith, of Woolwich, weighed 190 stone.

Earl Spencer's 5 years and 1 month old Durham Ox, shown in Class II., and purchased by Mr. Strachan, of Whitechapel, weighed 205 stone, and had 29 stone loose fat.

Mr. Rowland's 4 year and 8 months old Hereford Ox, shown in Class II., and purchased by Mr. Morton, of Great Bell Alley, weighed 203 stone, and had 27 stone loose fat.

Mr. Stokes' 4 years and 7 months old Durham Ox, and purchased by Mr. Ford, of Kenton-street, weighed 202 stone, and had 20 stone loose fat. Shown in Class II.

Mr. R. W. Baker's, 6 years and 1 month old Short-horned Ox, shown in Class II., and purchased by Mr. Slater, of Kensington, weighed 200 stone, and had 22 stone of loose fat.

Mr. Senior's 4 years and 9 months old Hereford Ox, shown in Class II., and purchased by Mr. Bellringer, of the Strand, weighed 192 stone, and had 19 stone loose fat.

Mr. Rowland's 4 years and 7 months old Hereford Ox, shown in Class III., and purchased by Mr. Sharp, of Paddington, weighed 173 stone, and had 23 stone loose fat.

Mr. Bailey's 4 years and 6 months old Hereford ox, shown in Class II., and purchased by Mr. Mortlock, of the New-cut, Lambeth, weighed 185 stone, and had 22 stones 6lbs. loose fat.

The Hon. Charles Arbuthnott's 2 years and 7 months old Durham steer, exhibited in Class IV, and purchased by Mr. Sharp, of Paddington, weighed 130 stone, and had 15 stone loose fat.

Mr. J. F. Johnson's 3 years and 4 months short-horned heifer, shown in Class VI, and purchased by Mr. Croker, of Brompton, weighed 149 stone, and had 21 stone loose fat.

Mr. Cowper's 4 years and 10 months old Durham cow, which gained the first premium in Class VI, and purchased by Mr. Sutton, of Kingsland, weighed 156 stone, and had 21 stone 1lb. loose fat.

Mr. Potterton's 3 years and 6 months old Durham Heifer, shown in Class VI., and purchased by Mr. Shepperd, of the New-cut, Lambeth, weighed 156 stone 6lbs., and had 23 stone loose fat.

Mr. Richardson's 4 years and five months old Durham Heifer, shown in Class VI., and purchased by Mr. Cowell, of Chandos-street, weighed 190 stone, and had 24 stone loose fat.

Mr. Wratishaw's 7 years and 5 months old Durham Cow, shown in Class VII., and purchased by Mr. Moray, Whitecross-street, weighed 166 stone, and had 28 stone loose fat.

The Hon. Mr. Simpson's 7 years old Durham Cow, shown in Class VII., and purchased by Mr. Hancock, of Park-street, weighed 164 stone, and had 25 stone 2lbs. loose fat.

Mr. Wratishaw's three 20 months old Leicester wethers, purchased by Mr. Austin, of the Lower Road, Islington, weighed respectively 14st. 4lb., and together had 36lbs. of loose fat. Exhibited in class VIII.

Mr. Burgess's three 20 months old long woolled wethers, exhibited in class VIII., and purchased by Mr. Ford, of Kenton-street, weighed respectively 16st. 4lb., and together had 36lbs. of loose fat.

Mr. John Painter's 20 months old Leicester wethers, which obtained the first premium in class VIII., and purchased by Mr. Plume, of Carter-lane, weighed 22st. 1lb., 18st. 7lb., 17st. 7lb., and together had 5st. 7lb. of loose fat.

Mr. S. Grantham's 20 months old Southdown wether, which obtained the first premium in class 10, and purchased by Mr. Giblett, of Bond-street, weighed 13st. 1lb.

N.B. Mr. Grantham's sheep, of which the weight was given in our last, were those in class XI., and not class X., as there stated.

His Grace the Duke of Richmond's three 20 months old Southdown wethers, which obtained the second premium in class X., and purchased by Mr. Hancock, of Park-street, weighed 16st. 4lb., 14st. 4lb., 16st. 3lb.

N.B. These sheep were given as being in class XI. in our previous report, it should have been as here, class X.

The Right Honorable Lord Western's three 22 months old Merino and Leicester wethers, which were not classed in consequence of the stewards being of opinion that they could not compete in class X., purchased by Mr. Allen, of Mount-street, weighed 16st. 7lb., and 2st. loose fat, 15st. 2lb., and 1st. 6½lb. loose fat, 16st. 4lb., and 2st. 5lb. loose fat.

Mr. Barnard's 21 months old Southdown wether,

purchased by Mr. Kent, King-street, Holborn, weighed 15st. 6lb., and 2 stone loose fat.

The Right Honorable the Earl of Lovelace's three 32 months old Southdown wethers, exhibited in class X., and purchased by Mr. Giblett, Bond-street, weighed 19st. 4lb., 19st. 4lb., 21st. 4lb.

His Grace the Duke of Richmond's three 32 months old Southdown wethers, which obtained the second premium in class XI., and purchased by Mr. Hancock, of Park-street, weighed 17st. 1lb., 17st. 7lb., 16st. 2lb.

N.B. These were given as being in class X. in our last report.

His Grace the Duke of Norfolk's three under 34 months old Southdown wethers, exhibited in class XI., and purchased by Mr. Hancock, of Park-street, weighed 20st., 20st. 2lb., 19st. 2lb.

Mr. Redgrave's two 20 months old New Leicester wethers, exhibited in class IX., and purchased by Mr. Ulph, of Regent's Park, weighed 15st. 5lb., 16st. 3lb., and had together 30lb. loose fat.

Mr. Chamberlain's three 20 months old New Leicester wethers, which gained the first premium in class IX., and the gold medal, as the best pen of long-woolled sheep, purchased by Mr. Maynard, of Chelsea, weighed 17st. 7lb., 17st. 1lb., 16st. 7lb., and had 50lb. of loose fat.

Mr. R. Rowland's three 21 months old long-woolled wethers, exhibited in class IX., and purchased by Mr. Piper, of Chelsea, weighed 16st. 5lb., 17st. 4lb., 18st.

The Most Honorable the Marquess of Exeter's three 20 months old long-woolled wethers, exhibited in class IX., and purchased by Mr. Slater, of Kensington, weighed 17st. 2lb., 18st., 20st. 2lb.

The Most Honorable the Marquess of Tavistock's three 20 months old Leicester wethers, which obtained the second premium in class IX., and purchased by Mr. Guerrier, of Islington, weighed 18st. 6lb., 19st. 4lb., 20st. 2lb.

Mr. Sanday's two 20 months old long-woolled wethers, exhibited in class IX., and purchased by Mr. Fisher, of Marlborough-street, New Cut, weighed 20st. 6lb., 20st. 1lb., loose fat both together 4st. 2lb.

The other sheep, purchased by Mr. Sutton, of Kingsland, weighed 19st. 5lb., loose fat 12lb.

Mr. Oakley's three 20 months old Kent wethers, exhibited in class IX., and purchased by Mr. Watson, of Strood, weighed 24st. 6lb., 19st. 5½lb., 17st. 6lb.

MR. HUSKISSON ON THE CORN LAWS.

The following letter was written by Mr. Huskisson to one of his constituents, in the year 1814:—

MY DEAR SIR.—A report has reached me from various quarters, that the part which I have taken in the House of Commons on the corn laws, has given offence to some of my constituents. I have heard this report with great concern, but, considering the misrepresentations which are industriously circulated throughout the country, without much surprise.

In opposing, as I did, the scheme of Sir H. Parnell, for laying a prohibitory duty on the importation of foreign wheat up to 84s. per qr.,—and that of Mr. Foster, for prohibiting it altogether up to 100s. I have incurred the displeasure of many, who think that the British grower will not be sufficiently protected by the much milder system which I have substituted. On the other hand, there are many others, who think that the scale by which I have proposed to regulate the import is too high. I will not pretend to say that the circumstance of some condemning my suggestion as

not doing enough, and others as doing too much, is any proof (though I think it affords some presumption) that the middle course which I have steered between the supposed opposite interest of the grower and consumer, is fair to both. But of this I am quite sure, that the far stronger measures which were proposed in the House would not have been rejected, if an attempt had been made simply to negative them, without substituting some other measure in their stead.

It is unnecessary for me to trouble you with my reasons for opposing the stronger measures of Sir Henry Parnell, and Mr. Foster, because I apprehend that, whatever objections are felt at Chichester against my plan, they are founded on the supposition, not that it does not go far enough, but too far for the protection of the British grower, and that the effect of it will be to press hard upon the consumers and the poor.

If I were not fully convinced that the consumer in general, but more especially that class of consumers whose subsistence depends on their own industry, would be benefitted by the proposed alteration, it would not have had my support. My sole object is to prevent (as far as human means can prevent) bread-corn from ever again reaching the late extravagant prices. Can any man have witnessed the scarcities and consequent privations of the people, during six or seven different seasons of the last twenty years, without feeling anxious to guard the country against the return of such severe distress? But if we wish to cure an evil of this alarming magnitude, we must first trace it to its source. What is that source? Obviously this—that, until now, we did not, even in good years, grow corn enough for our own consumption. Habitually depending on foreign supply, that supply was interrupted by war, or by bad seasons abroad. The present war, it is true, is now at an end, but peace is, at all times, too precarious not to induce us to guard against the repetition of similar calamities, whenever hostilities may be renewed. But even in peace the habitual dependence on foreign supply is dangerous. We place the subsistence of our own population not only at the mercy of foreign powers, but also on their being able to spare as much corn as we may want to buy. Suppose, as it frequently happens, the harvest in the same year to be a short one, not only in this country, but in the foreign countries from which we are fed. What follows? The habitually exporting country, France for instance, stops the export of its corn, and feeds its people without any great pressure. The habitually importing country, England, which, even in a good season, has hitherto depended on the aid of foreign corn, deprived of that aid, in a year of scarcity, is driven to distress bordering upon famine. *There is, therefore, no effectual security, either in peace or war, against the frequent return of scarcity approaching to starvation, such as of late years we have so frequently experienced, but in our maintaining ourselves habitually independent of foreign supply.* Let the bread we eat be the produce of corn grown among ourselves, and for one, I care not how cheap it is; the cheaper the better. It is cheap now, and I rejoice at it, because it is altogether owing to a sufficiency of corn of our own growth. *But in order to ensure a continuance of that cheapness and that sufficiency, we must ensure to our own growers that protection against foreign import which has produced these blessings, and by which alone they can be permanently maintained.*

The history of the country for the last one hundred and seventy years clearly proves, on the one hand, that *cheapness produced by foreign import is the sure forerunner of scarcity*; and, on the other, that *a steady home supply is the only safe foundation of steady and moderate prices*. During upwards of one hundred years, up to the year 1765, the import of foreign corn was restrained by very high duties. What was the state of the country during those one hundred years? That in ordinary seasons our own growth supplied a stock of corn fully ample for our own consumption; that in abundant seasons we had some to spare, which we exported; that in bad seasons we felt no want, and were under no apprehension; that the price of corn seldom varied more than a few shillings per qr.; that we had no years of inordinate gain to the farmer, and of starvation to the consumer; the prices, instead of rising from year to year, were gradually diminishing; so that, at the end of this long period of a century, during which we never imported foreign corn, they were actually one-fifth lower than at the beginning of it. Would to God that we had continued in this salutary system! But in 1765 it was most unfortunately abandoned. What has been the result? Precisely the reverse of the former system. Instead of a steady supply, afforded at steady and moderate prices, we have witnessed frequent and alarming scarcities. Every year our dependence on foreign supply was increasing, till the war came, and by interrupting that supply, greatly aggravated all our evils; for a country which depends on enemies or rivals for the food of its people is never safe in war. In the first eighteen years of this war we were forced to pay sixty millions of money (to nations, every one of whom has, in the course of it, been our enemy), for a scanty and inadequate supply of foreign corn; and when for this purpose we had parted with all our gold, and even our silver currency, combined Europe shut its ports against us, and America co-operating, first laid an embargo, and then went to war. This combination was formed with the vain hope to break our spirit by starving our bodies. We struggled hard, both at home and abroad, but by the struggle we have gained much. Abroad we have subdued our enemies—at home we come out of the war with our agriculture so extended and improved, as to make us at this moment independent of foreign supply. We are so at this moment; and shall I, who, to the entire conviction of my own judgment, have traced the long sufferings of the people to a contrary state of things, be deterred from using my honest endeavours in Parliament to prevent the recurrence of such sufferings? For that purpose we must go back to the principles of our forefathers; and, by reverting as much as possible to their system, we shall secure to ourselves and our posterity all the benefits which they derived from it.

I admit that if unlimited foreign import, which the war had suspended, were now again allowed, bread might be a little, though a very little, cheaper than it now is, for year or two. But what would follow? The small farmer would be ruined, improvements would everywhere stand still, inferior lands, now producing corn, would be given up, and return to a state of waste. The home consumption and brisk demand for all the various articles of the retail trader, which has so much contributed, even during the pressure of war, to the prosperity of our towns (and especially of those which are not connected with manufac-

turers of foreign commerce), would rapidly decline; farming servants, and all the trades which depend on agriculture for employment, would be thrown out of work; and the necessary result of the want of work would be, that wages would fall even more rapidly than the price of bread. Then comes such interruption to the foreign import, coinciding with the decay of agriculture at home, and corn is suddenly forced up again to a famine price. Such, I conceive, would be the inevitable consequence of again placing ourselves in a state of habitual and increasing dependence on foreign supply. Who upon the long run, would profit by such a state of things? Certainly not the consumer; but precisely those who have profited too much already from such a state of things—namely, the overgrown farmers, with large capitals. They will be enabled, for two or three years to bear up against the foreign import; and whenever that import is interrupted the extravagant prices they will then be enabled to command, will more than repay the temporary losses which their poorer but not less industrious neighbour had not the means to withstand. Every acre thus forced out of cultivation will ensure to them an ultimate increase of profit, and in proportion to that profit will inflict an increased pressure on the consumer. *To protect the small farmer, therefore, at this moment, is ultimately to protect the people.* This is my sole object; and, whatever may be the fate of the bill now in the House of Commons, I can most conscientiously declare it is in my opinion, the sole tendency of the plan which that bill is calculated to carry into effect.

I have troubled you already at great length, but the subject is far too extensive to be properly discussed in any hasty communication, which my numerous avocations here will afford me leisure to hold with any of my constituents. For years it has occupied my attention; and for years, I can truly say, I have foreseen the necessity of adopting the principles on which the House of Commons is now acting.

If my constituents, upon mature consideration, should differ from those principles, I shall deeply regret that I cannot concur in their opinions. To them I owe every respect, and to their wishes it must be my first wish to show every possible deference; but, on an occasion in which, after the most anxious reflection, my own conscientious judgment is satisfied that the course which I have pursued is calculated to promote the best interests of the country, and to place the subsistence of the people upon a footing more stable and secure, more conducive to regular industry and individual comfort, I should hold myself unworthy of the trust which has been confided to me, and should indeed feel that I had betrayed it, if I were to put even the risk of losing the good will of a part of my constituents (a momentary loss I should trust) in competition with the discharge of a sacred public duty. They know and value their own independence, but in proportion as it is dear to them, they ought to respect mine. I must frankly say, if I cannot be their unfettered representative, I cannot, to any useful purpose, represent them at all. To their services, which is that of the public, my time and attention in Parliament are steady and cheerfully devoted. The only reward I look for is the kindness and confidence of those who have sent me there; but that reward, however valued, I can neither consent to purchase at the expense of truth, nor to retain by flattering the people to their ruin. If, unfortunately, this be the

price which a member for Chichester is expected to pay for that seat; which I deem it the proudest honour to owe to their free choice, it is a price which neither duty nor honour will permit me to pay; for I should then hold that seat by a tenure not less injurious to their interests, than degrading to the character of their representative. These feelings you are at liberty to make known in any quarter you may think proper. I have thought that the occasion called for them—I have stated them without reserve; but with an undiminished sense of gratitude for the many favours and friendly offices for which I am indebted personally to you and many others, and generally to all my constituents.

Believe me, my dear Sir, very faithfully yours.

WILLIAM HUSKISSON.

ON BLACK-WATER.

BY MR. W. A. CARTWRIGHT, WHITCHURCH.

(From the Veterinarian.)

Having had an opportunity recently of making a few postmortem examinations in cases of black-water, I have sent them to you. It will appear that there were not those morbid appearances in the liver and stomachs, especially in the third stomach, that have usually been deemed the cause of the disease. There might have been constipation, for aught I know, at the commencement, although I have my doubts about it, but I am inclined to think there is still a little mystery connected with the disease, and that it may arise from different causes, not at present fully understood, yet the prevailing cause is probably connected with the food taken in and deteriorating the circulating fluid. It is well known that, in many cases of constipation, there is no black-water, therefore this cannot be always the cause of the disease.

It has not fallen to my lot to treat many cases of black-water, as they are generally doctored by their owners or by druggists; but this I know, that numbers die around me. I never lost but one patient, and that, I may say, was no fault of mine. I never saw, in what we commonly call black-water, any blood mixed with the urine, nor was there in these cases. The livers were little different from healthy ones, and very like many that we see in fat cattle or others that we consider sound. Here and there they were tinted of a clayey colour, and with a few cysts containing a sort of gritty substance; but there was nothing of sufficient importance, one would think, to affect the health, or the quantity of bile secreted, though it is undeniable that, even in these cases, the gall-bladders were distended with bile different in colour and consistence from what we usually find in it. In a state of health the gall-bladder is sometimes very much distended with bile.

I am perfectly aware that in a great many cases, if we can produce purging, our patients get well, or even before that takes place, and sometimes without it. In the following cases there was not the least staking, but, in my mind, the appearance of the stomachs was perfectly natural. As there was no constipation, and the stomachs were full, to what must we attribute the disease? Are we to say that there was something injurious in what had been in the intestines a few

days before, and that absorption had taken place, and vitiated the blood and bile, and so produced death? At any rate, there must have been torpidity in the action of the stomachs, and most probably through the nervous system.

CASE I.—On Thursday, September 22, 1836, I examined a cow that died the night before. About a fortnight previously she was found to be affected with black-water, and thought to be staked. She had a drink administered to her by a person in this town, and was afterwards attended on by a farrier, who gave her several drinks, and, in a week afterwards, she got well so far as the water was concerned, though but little dung came through her during that period, and what was evacuated indicated staking. For the last week, but especially for the last few days, her fæces were as thin as water, but in very small quantities. She ate hay and grass very well; but latterly her appetite failed, she got weaker, and her respiration was hurried. She was a little heavy in her appearance, but did not seem in any pain, or at all uneasy, except that she grunted occasionally. She voided plenty of urine.

Examination.—The paunch was full of half-masticated food, hay, grass, and water. The third stomach was full, but the food was soft, and the stomach was sound. The fourth was empty and sound. The whole of the other bowels were inflamed on their mucous coats, and streaked lengthways on their rugæ, just like a riband: the streaks on them were of a black colour. The cortical portions of the kidneys were softer and more tender than in their natural state, and spotted with brown and black. In this case the intestines would appear to be the seat of disease, or, at any rate, the immediate cause of her death.

CASE II.—Aug. 27th, 1838. Mr. Cotgreave, of this town, wished me to go and see a cow of his that he was informed was dying in a field, from the effect of black-water. She had been ill since the 22nd, and, during that time, he had given her two of Hassal's "cure all" drinks, composed of 2lbs. of salts, 1 quart of linseed oil, 1 pint of port wine, and plenty of gruel.

Symptoms.—When I first saw her, she seemed in a dying state, but I was informed that she had suddenly got much worse from having been drenched just before with a pound of salts. She was lying down, and we could not get her up by any manual force, or by enticing her with the calf, but by means of the dog we did so.

After she had been up some time, I found the pulse from 120 to 130. She was tolerably full, but not at all swollen: in her ears and legs, and all over her, she was warm. The mouth was moist, and I may say in its natural state; the eyes not inflamed, and not yellow, but pale: the respiration was too quick, though little more so than in other cows, as the weather was then very hot. Her urine was and had been most of the time since she was taken ill, of a brown colour, not fairly black, and it was now thought not to be so black as at first.

I raked her, and could feel the third stomach, which did not appear hard, but full: the dung in the rectum was soft, but had a few harder lumps in it.

As I found she had had a great deal of purgative medicine, I felt inclined to go upon the tonic or stimulating plan, and therefore gave her two powders (one immediately), each composed of half an ounce of ginger, two drachms of gentian,

and ten drops of croton oil. The other, however, was given in the afternoon. She was then considerably better, getting up without much force being used, and walking about very well.

28th, 8 A.M.—Worse; very weak, and could be hardly got to move. Pulse 100 to 120. Her general appearance was not so very bad, but there was a peculiarity about the breathing, and a great debility. I gave half an ounce of ginger and two drachms of gentian; but at noon she walked round and round very quickly seven or eight times, and then fell down and died.

Examination, four hours after death. The paunch had a small wheelbarrow-full of soft food in it. The second stomach contained very little. The third was not full, but nearly so; what was in it was soft, especially towards the centre, and there was no pellicle on any of its leaves or any inflammation. The fourth was empty, and it and the other stomachs were apparently in a perfect state of health. The large intestines were streaked with black, and were blacker than usual throughout their whole extent. A place here and there of the small ones had the same colour, but not to so great an extent, and contained a quantity of mucus. The bladder was full of urine, the colour of porter, not black or thick. The liver was little different from its appearance in health, except being here and there a little paler, or of a clayey colour. The gall-bladder was full of a yellow green bile, as thick as treacle: its mucous coat was not inflamed.

Kidneys.—Each of them weighed 2lb. 3oz. Their general external appearance on the surrounding adipose matter being removed, was of a dark mottled colour, the blacker and the lighter colour being of nearly an equal extent. The deeper streaks and spots were of a brown or blackish colour, and the other parts or ground were of a lighter cast, not much unlike the colour of some of the lighter-coloured stone bottles. These separate appearances ran throughout its cortical portion, until we came to the medullary or tubular substance, which was not much different from its appearance in health. It would seem that there was congestion, marked by the dark striæ which the cortical substance contained. Its texture was not at all softened, but, on the contrary, felt tough. A quantity of fluid could be squeezed out of the kidneys everywhere after cutting into them, and which had the same appearance as the urine. The capsule or covering was not diseased. The pelvic portions or central cavities had no mucous lining, nor did they shew any inflammation.

CASE III.—Mr. Cotgreave lost another cow (I did not attend her) a week after this, and which had been grazing in the same field. On examination I found similar appearances in the kidneys, and there was no staking, but in all the dung was soft and natural. There was more discolouration about the intestines and internal parts than in the first case of his. He also had three other cows ill in the same ground within the space of a fortnight, but they got well. The land that these cows had been grazing upon was high and dry, with plenty of water, and the pasture good, although not luxuriant, being bare in some places. The weather had been very changeable, and the winds had varied to almost every point. The owner seems to think that they had nipped the bushes of elm that grew on the ditch bank, and fancied this might have produced the disease.

The other cows had purging medicine given to them, and they did well. To one of them he gave

a quart of port wine after the physic. All these were milking cows, in fair condition, but not fat.

CASE IV.—Sept. 24, 1838. I have just opened an aged cow that died to-day. She had been ill for about a week. On the day in which her illness was discovered she had a pound of salts, and on the next day a drink from the farrier, and he attended her during her illness, and gave her several opening drinks. Her bowels, however, had not been much moved during the greater part of the time. Her water was bad whenever they saw her void any; but for nearly the last three days they had not seen her pass it; and during that time she seemed as if she wanted to urinate, and could not. She moaned a great deal, and seemed very ill. A day or two after she was taken ill, she got out and went to the pit, and drank a great quantity of water, and afterwards seemed very much swollen, almost to bursting. She ate almost any thing for two or three days at first, but would not feed during the last two or three. I did not see her alive, but had this account from the owner.

Examination.—I opened her in less than an hour after her death. The person that stuck her immediately after she died said that her blood was gone to nothing, but was like the urine she had discharged. The paunch had upwards of a wheelbarrow-full of soft, well-comminuted food in it, mixed with a great deal of water. The second stomach had a little liquid fæces in it. The third stomach was not above half full, and what was in it was very soft. There was not the least vestige of disease or discolouration either in this or the other two preceding stomachs. The fourth stomach had nothing in it but a small portion of liquid fæces. It had a very unhealthy appearance, being of a smoky or blackish cast, and the reflections or plaits were somewhat thickened, and infiltrated with serum.

I did not examine the interior of the intestines, although I ought to have done so; but to all appearance they were sound.

The left kidney was of a similar colour to those of Mr. Cotgreave's cows, but not quite so distinctly marked. The spots were much smaller. It was a very plump one, and seemed enlarged. The right kidney had a tumour which occupied the space of one of its lobes, and contained nearly an ounce of clear serous fluid. Its covering resembled a thin bladder. One of the other lobes, at the opposite end, was of a much lighter colour. It contained a little fluid, and appeared almost as if absorption of its substance was taking place, and a cyst was forming, like that just mentioned. Its texture was very different to that of the other kidney, and did not seem as if it secreted properly. In some of its tubes I found small calculi half the size of a pea. Each of these kidneys (especially the left) was much infiltrated with a fluid similar to that in the bladder, and which could be easily squeezed out. This kidney (the left) did not seem red or inflamed, but presented more an appearance of softening and congestion, and almost approaching to disorganization. The bladder contained about a pint of urine of a dark brown colour, but scarcely thicker than usual: the bladder itself was sound. The gall-bladder was sound, but filled with about three pints of bile of a brown colour, and as thick as treacle when melted. The liver was as sound as it generally is.

The lungs:—In two places at the posterior extremity of one of the lungs there was a great deal of disease; indeed, there was complete disorgan-

ization, as matter was forming in points almost all over these places, and extending in patches as large as a hand. These patches had a distinct line of demarcation between them and the sound portion, and I fancy had little if any thing to do in producing her death, or perhaps even any recognizable illness when she was alive. The pleura covering these diseased portions seemed not to be quite free from disease. The general cellular tissue had no jaundiced appearance.

The owner of this cow has had one ill since of the same disease, and which recovered under my treatment. He says he has lost one or two every year, from the same complaint, for twenty years past. They have fed on the same land, which is low, and at nights has a fog generally hanging over it.

PRIZE ESSAY, ON THE BLACK CATERPILLAR.

Observations on the Anatomy, Habits, and Economy of Athalia Centifolia, the saw fly of the turnip, and on the means which have been adopted for the prevention of its ravages. The Prize Essay of the Entomological Society, and Agricultural Association of Saffron Walden, for the year 1837, by George Newport, Esq., Member of the Royal College of Surgeons and of the Entomological Society of London.—London: Longman and Co., 1838, p. 32.

The subject of noxious insects has recently become of general interest, and a degree of importance has of late been attached to such branches of investigation, which was previously unknown, and some valuable additions have been made to our knowledge of their economy and habits, which are the likeliest means of affording a clue to some remedy for their destructive ravages. Several agricultural and other societies have offered prizes for practical essays on the subject, and the reading of a paper on noxious insects at the last meeting of the British Association for the advancement of Science, gave rise to a discussion, which ended in a resolution to form an agricultural section—a most desirable object, thus to bring agriculture to the test of science, from which much advantage will doubtless be derived. Among the bodies which have thus aided the investigation of the natural history of the insects of agriculture, is the Entomological Society of London, which in 1837, offered a prize of five guineas for the best essay, on the natural history, economy, and proceedings of the larva of the *Athalia centifolia*, or black caterpillar, which preys upon the turnip crop, together with the result of actual experiments which have been made for the prevention of their attacks, or the destruction of the insects themselves. To this sum another of the same amount was added by the Saffron Walden Agricultural Association, and the prize was awarded to Mr. Newport, for the above essay, which is now published for the benefit of the agricultural world; and coming as it thus does, as the best essay—awarded by so learned and scientific a body, in conjunction with one so distinguished for practical knowledge—to which public competition was invited, and being too on a subject so important to the farmers, nothing is more deserving of notice in a periodical, peculiarly watching over agricultural affairs and in-

terests. The following stands as preface to the essay :—

"This essay is published in pursuance of the following prospectus of Prize Essays upon the subject of Noxious Insects, and remedies for their destruction, issued by the Entomological Society of London in 1837. It being one of the principal objects of the Entomological Society of London to render their labours practically useful, the council have resolved to appropriate the annual sum of five guineas to the writer of the best essay, (to be drawn up from personal observation,) upon the natural history, economy, and proceedings, of such species of insects as are obnoxious to agricultural productions, to be illustrated by figures of the insects in their different states; together with the results of actual experiments made for the prevention of their attacks, or the destruction of the insects themselves. An arrangement has also been entered into with the Agricultural Society of Saffron Walden, whereby the further sum of five guineas has been proposed to be added to the prize to be offered for the year ensuing; the subject of the essays to be,—the black, or nigger caterpillar, of the turnip, or larva of *Athalia eentifolia*. The essays must be accompanied by testimonials of the success of the remedies proposed by the writers, and must be forwarded to the Secretary of the Entomological Society, (at No. 17, Old Bond Street,) with fictitious signatures, on or before the 4th Monday in January 1838, when they will be referred to a committee to decide upon their respective merits, after which, with the permission of the writers, both the prize essay, and any others of value, will be published."

The above is exceedingly fair and straightforward, and of course compliance with these, at least in general, is necessary, not only in this, but every other case, where such subjects are offered for public competition. The time for receiving the essays was the "fourth Monday in January, 1838, on or before," doubtless that the farmers might have the benefit of the information, &c., before the turnip season; and it certainly is exceedingly strange, and seemingly inexplicable, that it should not be published until the November following—nine months after the time assigned for its reception—and when the turnips were out of danger from the caterpillars. The cause of this seems to be explained at page 28 of the essay, where the writer says—

"Specimens I obtained in the cocoons, from the soil of a turnip field in January last, have been developed into perfect flies in the beginning of the present month, (May 29, 1838.)"

We thus find the essayist hunting for specimens amid the snow storms of January—the very month for the lodgment of the essays, and entering the result in his essay, *late in the month of May; four months* after the time fixed in the prospectus, for the lodgment of the essay in Bond Street. Possibly the time had been extended, but why no public announcement of this, in the same vehicles as the prospectus was? in order to give other essayists the benefit of time for making additional observations, since it could not be published as originally intended, if it were the case? and why is no mention made of this extension, in the prospectus? We find the president of the Entomological Society, at the last annual meeting, reported to say (see *Entomological Magazine*, No. 24, p. 330.)

"The prize essays established by the society may be referred to for their practical importance to the

agriculturist; the essay proposed for the past year, was an investigation into the habits, &c., of the 'nigger,' or black caterpillar of the the turnip fly, (*Athalia centifoli*) towards the prosecution of which, the agricultural society of Saffron Walden joined us, by proposing an additional five guineas for the successful essayist. At present I regret to observe *one essay alone*, but *apparently a very valuable one*, has been sent in; and *this day terminates the period for its reception.*"

This was on the last Monday in January, and only one essay was sent in—it was not the one under consideration, as its internal evidence above quoted testifies; and all we know about it is, that it was a "very valuable one." If it were so valuable, how did it happen that the prize was not awarded to it, instead of one partly at least, unwritten at the assigned time; (see p. 28.) certainly not lodged according to the original conditions of competition; and how valuable, remains to be investigated? It is only fair to ask this, on behalf of the agricultural public. Undoubtedly the essay referred to by the president, should not have been withholden, more so, as it was given out that "*any others of value, besides the prize essay,*" was "*to be published.*" Can any person tell the agriculturalists, why no other, and especially why not this valuable essay, was appended to Mr. Newport's, according to promise. The essay itself however claims our attention. At page 20, he says, speaking of the habits of the insect in depositing her eggs,—

"They seemed to have arrived in a *flight*, and their numbers were *evidently* on the increase, for some time after they were first observed. They certainly made their appearance in this field only very recently, not having been observed there, until the morning in question. It was remarkable also that at this time the great mass of them was confined almost entirely to the eastern end of the field, while there was scarcely a fly to be met with in the middle, or at the western end. On the following day, the flies had advanced further to the middle of the field, and a day or two afterwards, there was not a fly to be seen at the eastern end, where they had commenced their *ravages*, the whole flight being then at the western end. Subsequently to this observation, I had repeated opportunities of noticing in other places a like progressive movement of the insects in *flights* or *clouds*, over certain portions of a field, apparently without the slightest reference to the direction of the wind at the time."

Again in allusion to the same habits he observes p. 23,—

"One circumstance which is not the least interesting in the economy of this species, is the regularity with which the insects proceed in flights across a field or district, in which they have made their appearance. This, as before noticed, was strikingly the case."

The above is certainly a new fact connected with the proceedings of the insect, and is a very interesting portion of its economy—not indeed previously unnoticed, but disbelieved, by many most eminent naturalists. Duncan in an excellent article on this species in the *Quarterly Journal of Agriculture*, No. 34, says, "*like the flies which they produced*, their larvæ are *sluggish and inactive, seldom moving* from the place where they fix themselves," and again p. 567, "*the flies could be very easily caught, even by the hand, for they are sluggish and inactive, seldom flying rapidly, or to a distance.*" Professor Rennie also says, "they sel-

dom fly far." Thus we have these naturalists, in juxtaposition with Mr. Newport, and it is not now attempted to be decided which party is correct, but both cannot. Thus he has established a new fact, if it be granted that he has established it, and it is an extremely important one; but what does he mean when he says, "the flies commenced their ravages," certainly not that they had begun to devour the plants, for he says, p. 5, that, "in the pupa, and perfect state, it is *entirely harmless*." It is exceedingly difficult to guess at his meaning, if it has any, and if it has none it should not have been inserted as it may mislead.

In the introduction p. 8, he states, "It was not until recently, that the insect attracted the attention of naturalists in this country, and hence it has remained undescribed as a British species, until within the last few years." He is however mistaken, Marshall sent specimens of the insect in all its stages, to Dr. Morton, librarian to the British Museum, and he showed them to Sir J. Banks, who determined their "genus and species," and inserted Marshall's letter in the philosophical transactions, 55 years ago! He is also incorrect in stating that Mr. Yarrell (whose name by the way, occurs some half dozen times in the essay) was "the first to direct the attention of entomologists of the present day, to the serious ravages committed by it." James Rennie, Esq., for one, calls attention to it very ably in his excellent volume on '*Insect Transformations*,' which was published some time before Yarrell's paper was read before the Zoological Society.

The essayist further says, p. 5, "their sudden and almost simultaneous appearance, at distant and uncertain periods, is an occurrence which naturalists have much difficulty in accounting for," and proceeds to hint a "succession of dry and warm summers," is the cause, quoting Mr. Yarrell's authority. This however was not the case either in 1818, or 1835, nor is there evidence to establish it previously, and as to the difficulty, it is cleared up in an article which appeared in the *Farmer's Magazine*, vol. 6, p. 85.

In page 6 of the essay, commences a long and minute description of the *anatomy* of the insect in its different stages, which occupies upwards of thirteen pages of the twenty-eight of letter press, which the essay contains. This is no doubt extremely characteristic and interesting to a surgeon, like Mr. Newport, and it is but just to say it is elaborate, minute, and scientific; but of what use is it to farmers, for whom this essay was intended? Will one in fifty of these persons into whose hands the essay may fall, wade through this mass of, to him, unintelligible matter? Such matter may be described in a work expressly on entomology, and of a purely scientific character, but should never be inserted in any essay like the present, and it is not only a sad essay of the judgment and taste of the persons who published it, but a certain method of creating disgust in the minds of the farmers, at all succeeding essays—thus stifling the spirit of enquiry in its very infancy. Besides, the "*anatomy*" of the insect, a branch of inquiry so prominent in this essay, formed no part of the requirements of the original prospectus—it is a work of supererogation on the part of the writer, which he would have done well to reserve for some paper on the "nervous system of insects," or some lecture on comparative anatomy. Take this extract as a sample, in reference to the perfect insect or fly:—

"In its internal anatomy, this insect affords some

very interesting and remarkable peculiarities, particularly in the conformation of its *digestive organs*. The *alimentary canal* is formed as in other insects, of three structures or coats, an external, or peritoneal, which is *exceedingly thin and delicate*; a middle or muscular, which is covered by the first, and in general is *thick and strong*; and an internal or mucous coat, which forms the internal covering, or lining of the whole canal," p. 6.

Now of what possible utility is this? Does the farmer care one iota into how many coats the alimentary canal of an insect is reducible, in a stage when it does not eat one particle of his produce? Then why, in the name of common sense, pester him with laboured descriptions of the *salivary glands*, the *hepetic vessels*, the *nervous system*, &c., with a number of terms which half the farmers will not trouble themselves to spell? One thing however must be noted. By his dissections of the ovaries of the female flies, he detects, at least, 250 eggs, while Yarrell supposed they only deposit 20. This is a discovery, but he does not pretend to say that the insect will deposit that number, for he subsequently decides that "they will not deposit them at any time," but "during the hottest part of the day," so that if no such weather occurs, during the existence of the flies, the eggs will never be deposited. His discovery is only serviceable therefore, in shewing the number she is capable of depositing—not how many she actually produces—the practical part of the case.

There is one serious defect in the essay, which it is surprising, that used, as the gentlemen of the Entomological Society are, to subjects of delicate observation, they have not detected. There is no continuous observation of the insect, through its different stages, in the same individuals. There is a vagueness and hypothetical mode of describing the insect in its various stages, which is very unsatisfactory to the mind of a philosophical observer. We give a few instances, such as—

"I first observed the eggs deposited as above stated, on the morning of the 26th July, and I visited the same field daily, for four or five successive days. On the 29th July there was scarcely a perfect insect to be found, and they had nearly all perished, having deposited their ova," p. 24.—"Judging from the activity of the embryo within the egg, on the 30th, being the 4th day after oviposition, there is reason to believe, that had the weather continued fine, they would have appeared much earlier."—p. 24. "The first time the larvæ changes its skin, is at about the fifth day, after it has left the egg, but I regret that I was accidentally prevented from watching it closely, through the remaining period of its larvæ state, so as to enable me to ascertain correctly, whether it changes its skin more than twice," &c.

Here is supposition sufficient, but without proof. Because he could not find a perfect insect, he concludes they had all perished, having deposited their ova—though he previously admitted they passed in flights; and founds an hypothesis of the period of their remaining in the egg state, "because the embryo was active," though he knows not when these identical ova were deposited, but "judges," because he first observed the parent flies on the 26th July! It would have been more satisfactory if he had bred the insect, rather than dissected it, before he competed for the prize.—But it was only seven days between the deposition and the appearance of the larvæ—at least he jumps at this conclusion. If he had read Marshall's work he would have known that the latter was

better acquainted with the habits of the insect, fifty-five years ago, than he is in his essay. Sad work this, for the investigations of the learned society of 1838. *Ten* days are well known to be the period of its continuance in the egg state, though its development might be retarded much longer. This is an unpardonable inaccuracy, and arises from his defective observations of the insect.

Speaking of the insect in the early stage of its larvæ, he says—

“When shaken from the leaves of the plant upon which they are feeding, they retain their communication with the plant and re-ascend the place of feeding, when the disturbing cause is removed, each by means of a fine silken thread, which it spins while falling, the same as is done by the larvæ of *Lepidoptera*,” p. 25—6.

This is another new idea, and is at variance with every naturalist who has yet written on the subject, and if established by subsequent observations, is extremely interesting. It has never before been noticed. There is something quite unintelligible in his description of the adolescent state of the insect. He states that after being in the cocoons, they remain in the larvæ state during the whole of winter, (when bred at some seasons,) afterwards their bodies become very much shortened, and then they change into a *nymph*. But he nowhere describes this nymph most unfortunately, for it is the only part of its natural history, which is obscure. Page 18, he describes the anatomy of the caterpillar, “*before it assumes the form of nymph*,” and refers to “figure 22,” for an illustration; but in his explanation of the figures, he describes fig. 22 as “the alimentary canal of the nymph.” It is quite impossible to know what he means, by the term, he only darkens counsel by words without knowledge.

We will not be further tiresome in following him through his further remarks, but come to the practical, which occupies rather more than two pages, under the head of, ‘means of preventing the ravages of the insect.’

It will be remembered that the prospectus required that the “essay should be accompanied by testimonials of the success of the remedies proposed by the writers.” Now, though it was scarcely likely that a document of this kind would be sent, yet there should have been some attestation of the success of the remedy, and certainly not a mere supposition, or speculative whim of the writer. By this test, we must try the essay before us. The only remedy which he mentions as *being successful* is the employment of ducks, and gives the authorities of a Mr. Osborne, and Mr. Yarrell, as to the success of the plan; he says, “but the only method which has hitherto been tried, with *anything like a fair prospect* of success, was,—by turning in six or eight dozen of ducks, which are very fond of the larvæ.” Now, after this he declares, as the result of his investigations, that it is *not from the destruction of the larvæ*, after they have become nearly full grown, and when their work of devastation is becoming every day more and more apparent, that a remedy for the evil can be expected.” Now this is the only state, in which ducks can be available, and thus he sets aside the *only remedy* which he ventures to say, is at all successful, and which has been recommended in old books on rural affairs, before he was born.

He sets up however another proposition to effect the object. Owing to the circumstance of no larva appearing from eggs deposited when the

weather was cold and wet, as he observed at Meonstoke, the larvæ were never developed; and he says,—

“From these circumstances therefore, *I have been disposed to think* that if at the period when the yellow flies are observed on the crops, the whole field could be *well watered* daily, or *twice a day*, with *sea-water*, or a solution of *salt and water*, the effect produced upon the development of the embryo, would be similar to the unfavourable weather in the observations above detailed—that in fact, the larvæ would not be developed, or would perish soon after they have made their appearance.” p. 30.

It is to be remarked, he does not aver this, but, “is disposed to think it would be the case,” and in the place of any certificate, &c., he says, it is “*judging* from previous observations,” and his “*suggestions* are offered to the agriculturists with much *diffidence*,” and after all he is “well aware of the practical objections to its employment.” Why one would have thought that in a practical essay, written for practical purposes, this would have been sufficient to stamp its inutility, and it only can excite the wonder of the farmers, that such a plan, and such language, could be issued forth as a PRIZE ESSAY, from a society, the prospectus of which declares that it is one of the *principal objects* of the Entomological Society of London, to render their labours *practically useful*.

For common decency, they should have withheld this sentence from the essay itself, without they wished to be based upon it a treatise on the diseases of the caterpillar, after so elaborate an anatomy of the depredator.

The farmers must be warned—if they need any warning on a subject so obvious—against employing Mr. Newport’s plan. To water his field well twice a day, ‘for several days,’ which the plan requires, would exercise sufficient patience, if the farmer were sure of success, but no man in his senses, would so drench his young turnip plants, for it must be their destruction. But to talk of *sea-water*, or salt and water, and to aver that it would “*hasten the growth of the crops*,” manifest a degree of ignorance, which we had supposed no man capable of, who should set about writing a treatise on rural affairs, much less a *prize essay*. If the caterpillars endanger the crop, Mr. N’s plan would certainly finish it. It is a certain cure, doubtless, for the black caterpillar—no certificate is necessary—for there would be no plants for the caterpillars to eat, five days after it was adopted!

But the essayist’s previous observations do not justify the conclusion that it would be useful, even if the plants could bear this ‘grape shot.’ His previous observations make out that it was not so much the *wet*, as the *cold*, that destroys the embryos. For we find page 24—5, that when the eggs were deposited the temperature was 73° Fah., and subsequently even 80° or 85°. But when the rain came, then the temperature fell to 68°, and the following days “much lower;” so that there can be no question it was the cold weather rather than the wet which killed the embryo. He sees this, but suggests that “cold would be produced during its evaporation;”—he does not even hint the *degree* of cold, but it could not be so much as 17°, or “much more,” which it seems was the case in the instance upon which he builds his fanciful scheme. Well does he to qualify it by, “*if after a trial, on a small scale, it be found successful*,”—aye, that’s the rub. The society may safely offer ten times ten guineas, to the man who ac-

compleishes the plan of the essayist. It certainly would be a favour if the farmers could have seen the other "very valuable essay," to which the worthy president of the Entomological Society alludes in his speech to compare them. One other practical point deserves attention, and Mr. N. shall be dismissed. In the conclusion of last May, he says, "should the spring continue favourable to them, by the continuance of fine weather, until after the period of sowing the turnips, there is great reason to apprehend a repetition of their mischief. He sounds needlessly the tocsin of alarm, and unfortunately too, without affording the means for escape from it; but the result has been, that his views are erroneous, as his plans are useless and impracticable.

The essay is accompanied by a very good plate, descriptive of the anatomy and appearance of the insects.

[For the benefit of our readers, and in order to give extended circulation to the information contained in the Essay, we subjoin it in full.—Ed. F.M.]

ESSAY ON THE TURNIP FLY;

For which a Prize, offered by the Entomological Society and the Saffron Walden Agricultural Society, was awarded to G. Newport, Esq., M.R.C.S., and M.E.S.

ON THE ANATOMY, HABITS AND ECONOMY OF
Athalia centifoliae, THE SAW-FLY OF THE TURNIP,
IN THE DIFFERENT STAGES OF ITS EXISTENCE;
AND ON THE MEANS WHICH HAVE BEEN ADOPTED
FOR THE PREVENTION OF ITS RAVAGES.

Amongst the many enemies which the agriculturist meets with in the cultivation of one of the most valuable products of his lands, the common turnip, is a species of *Saw-fly* or *Tenthredo*, *Athalia centifoliae*, Panz. The devastations of this insect have been carried to such an extent during the last few summers as very materially to affect the interests of the farmer, and hence it has become a matter of importance to him that its habits should be closely investigated, in order that some remedy may be devised for the purpose of checking its injurious progress. It was not until recently that the insect attracted the attention of naturalists in this country, and hence it has remained undescribed as a British species until within the last few years. But it has never been entirely a stranger to the agriculturist, although its appearance in numbers sufficiently great to occasion much injury to his crops has been at such uncertain and distant periods, that when it began, about five summers ago, to commit serious mischief, it was then almost entirely unknown to the agriculturists of the present day. It was, however, too well known to some of the older cultivators, who had not forgotten the devastations committed by it in this country about twenty years ago, when it was equally, or perhaps even more, destructive than it has been during the past three or four summers. In its larva state it was known to them at that time, as it is also at the present, chiefly

from its colour, and designated accordingly by the terms *black palmer*, *black canker*, *black slug* or *caterpillar*, *negro* or *nigger*. The fly itself, or perfect insect, was equally well known, and on its first appearance in very large flights on the turnips in the summer of 1833, long before any devastation had been committed by its larva, it was recognised by the older cultivators as the source of coming mischief. This was markedly the case in one instance, as communicated to me by H. Wooldridge, Esq., of Meon Stoke, Hants, who has also obligingly afforded me much valuable information respecting the habits of this insect, and which I have been able to confirm by my own observations. Mr. Wooldridge informed me, that on the first appearance of the insects, before he had himself observed them, one of his older neighbours remarked to him, that "the *yellow flies* which produce the *black palmers* were then abundant in the turnip fields;" but Mr. Wooldridge being unacquainted with the insects did not then regard the observation. In a few days, however, the larvæ had appeared in the fields in vast numbers, and, as it was subsequently found, at the same period, nearly throughout the whole of that part of the country. Similar observations were also made by other persons in Sussex and Kent, who amply testified to the injuries formerly produced by this insect in the southern parts of the kingdom.

Mr. Yarrell,* who has published an excellent paper on this insect, inserted in the second volume of "The Transactions of the Zoological Society of London," and who appears to have been the first to direct the attention of the Entomologists of the present day to the serious ravages committed by it, refers for the earliest public notice of its devastations to a paper inserted in the Transactions of the Royal Society for 1783, by W. Marshall, Esq., of Norfolk. It appears from the remarks of that writer, that this insect was particularly destructive to the turnip crops in this country in 1782, and that it had been equally destructive also about twenty-two years before that period. According to Mr. Yarrell it again made its appearance in 1818, and as above stated in 1833, since which period it has been more or less destructive in each succeeding summer. It seems from Mr. Marshall's account, that the parent flies were then equally well known with the larvæ, and that it was the opinion of the farmers at that time that they were not natives of this country, but came from the other side of the ocean. Mr. Marshall remarks that the opinion had that year been much confirmed, by the fact that they first made their appearance on the eastern coast,—that they had been washed upon the beach by the tide,—that fishermen had seen them "alight in cloud-like flights," and that they afterwards "lay upon and near the cliffs so thick and so languid that they might be collected into heaps, lying, it is said, in some places two inches thick." But, as remarked by Mr. Yarrell, whatever may have been the source whence the insects were originally derived, there cannot be a doubt but that they are now completely naturalized, although their sudden and almost simultaneous appearance at distant and uncertain periods is an occurrence which naturalists have much difficulty in accounting for. It seems, however, to have been almost uniformly observed by the agriculturists, and the circumstance

* Some Observations on the Economy of an Insect destructive to Turnips. By William Yarrell, Esq., V.P.Z.S. F.L.S. &c., p. 67.

is alluded to by Mr. Yarrell, that wherever this species has appeared in abundance, it has always been during a succession of warm and dry summers, and this will be in a great measure accounted for, and perhaps also its non-appearance in cold and wet seasons, by circumstances which we shall presently find to be connected with its development from the egg, and its subsequent appearance in the perfect state.

The injuries occasioned by this insect are always during its larva state; in the pupa and perfect state it is entirely harmless.

The larva attacks the young plant in every stage of its growth, from the first ten days or fortnight after its appearance above ground, until it has become very strong and far developed, and its bulb or root has acquired a diameter of three or four inches; and so extensive is the injury, that whole fields of turnips in their young state have been entirely destroyed by it, and the further growth of those which had acquired a large size before they were attacked entirely prevented.

My own observations during the past summer have been confined to the counties of Sussex, Hants, and Dorset, where I have had opportunities of watching the daily progress of the insect. It commences its injury by feeding upon the parenchymatous structure of the leaf, which it completely devours, leaving only the midrib, with a network of its branches and their ramifications, and it does not quit the leaf, unless by accident, until it has entirely devoured the whole of the parenchymatous structure. When the larva has become strong, and has arrived at about the middle period of its growth, it attacks every leaf of the plant, so that the respiration and other functions of the leaves, being entirely destroyed, the young plant necessarily perishes, although the root and stems of the leaves be not touched. Even when the plant has become strong, and in a great measure enabled to support much injury, its root having acquired a large dimension, the devastations of the insect very greatly check its further development; and consequently its growth is stunted. In one field where I had an opportunity of watching the daily progress of the larva, this was very strikingly the case. When the parent fly first made its appearance, and a few days afterwards, the larva, a large proportion of the turnips were three or four inches in diameter, and consequently the plants being very healthy, the leaves were large and numerous. The cultivator of this field paid no attention to the presence of the insect, thinking his crops safe from injury; but within a fortnight after the appearance of the larva, the leaves of the plants over a large extent of the field were completely destroyed, and the further growth of the turnips prevented. In other instances, as in one of a field of more than thirty acres, which I saw at Cranbourne in Dorsetshire during the last summer, the whole crop of plants, which were about three weeks or a month old, was entirely destroyed, almost every plant having been completely devoured, excepting the stem and the midribs of the leaves; and this was the case in many other instances both in Hampshire, Sussex, and Dorsetshire.

THE PERFECT INSECT.

The insect at first sight may readily be mistaken for one of its congeners, *Athalia rosæ*, which it very much resembles in size and general appearance. Both the male and female have the head, eyes, antennæ, and tips of the mandibles, black;

the mouth, palpi, and lower part of the face, yellow. The prothorax, middle portion of the mesa-notum, and scutellum, with the scapulæ, are of an orange yellow; the posterior portion of the meta-notum yellow, with a black spot on each side. The abdomen has eight segments, besides the anal process, and as well as the whole under-surface of the body and legs, is of a bright yellow, and the distal extremities of the tibiæ and tarsi are barred with black. The wings are dusky, hyaline, black at their base, and along the anterior margin and the sheath of the ovipositor is of the same colour. The male is smaller and more elegantly formed than the female, which in other respects it greatly resembles.

INTERNAL ANATOMY.

In its internal anatomy this insect affords some very interesting and remarkable peculiarities, particularly in the conformation of its digestive organs. The *alimentary canal* is formed, as in other insects, of three structures or coats, an external, or *peritonæal*, which is exceedingly thin and delicate; a middle, or *muscular*, which is covered by the first, and in general is thick and strong; and an internal, or *mucous* coat, which forms the internal covering or lining of the whole canal.

The alimentary canal, commencing at the mouth and pharynx, is encircled at the posterior part of the pharynx, or gullet, by the ganglia of the head, which constitute the superior and inferior portions of the brain through which the *esophagus* passes. This is a very narrow and transparent tube, which becomes gradually enlarged as it proceeds directly through the prothorax to the middle of the mesothorax, where it begins to be dilated into a funnel-shaped bag: it then passes through the metathorax, and immediately it has arrived in the abdomen is suddenly dilated into the *crop*, or honey-stomach, a large irregularly circular cavity, with its under-surface greatly extended in the shade of a pouch, which occupies in the female, before oviposition, the under surface of the anterior portion of the abdomen. It extends backwards nearly as far as the posterior part of the third segment. It is that part of the canal which, as its name implies, serves as a general receptacle for the food, and in which, as in its analogue, the honey-stomach of the bee, digestion does not take place. I have sometimes found it filled with a brownish opaque matter, which appeared to be composed of the pollen of flowers. At its posterior part it is succeeded by a rudimentary *proventriculus*, (fig. 6 and 7 e,) or gizzard, which is situated between it and the ventriculus (f). The *crop* is a muscular structure, in which, although but slightly developed, the longitudinal and circular fibres, and the six longitudinal bands which generally exist throughout the whole alimentary canal in insects, are very distinct. The crop is attached to the proventriculus by a reflection inwards and forwards of the whole muscular coat, which, immediately it reaches the anterior margin of the proventriculus, forms, covered by the inner or mucous coat, the valve of communication between the proventriculus and the crop. It then becomes greatly thickened, and is again reflected backwards like the segment of an arch, and forms the sides of the *proventriculus* (fig. 7 e). This is of an oval form, being short, and rudimentary, with its muscular coat much thickened. Its lining, or mucous membrane, is also considerably developed. Besides the valve at its anterior part it has one also at its posterior,

which divides it from the chylic stomach (f). This valve is formed by the contraction of the circular fibres of the muscular coat, and by the mucous coat with which they are covered. After the formation of this valve, the parietes of the canal are again reflected forwards and outwards, to form the interior part of the *ventriculus*, or large digestive stomach, so that the proventriculus is included, and almost hidden, between the reflections of the sides of this part of the canal and the crop. This being the case, the proventriculus does not possess the six longitudinal bands, which exist on the other parts of the canal; they pass over it directly from the crop to the ventriculus (fig. 7 e). When viewed on the outside of the canal, the proventriculus appears within the crop like an elongated nipple-shaped valve (fig. 6 e), extending into it from the ventriculus or stomach. The rudimentary existence of the proventriculus in this tribe of insects is exceedingly interesting, since it has been believed by some anatomists* that a gizzard, or proventriculus, does not exist in the masticating *Hymenoptera*; but this is now seen to be incorrect. This fact is still more interesting from its constituting in this species a transitional form between the simply elongated portion of the ventriculus in the butterfly, and the well formed and distinct proventriculus of the bee and wasp. The chylic stomach, thus formed at the posterior part of the first segment in the female, passes backwards almost in a straight line of uniform diameter along the under-surface of the abdomen, completely covered by the *ovaries* as far as the sixth segment, where it is turned to the left side of the body, and then forwards and upwards to the right, as far as the anterior part of the sixth segment. It then turns again to the right side, and again to the left, and ends at the commencement of the seventh segment in a narrow extremity, the *pylorus* (fig. 6, 8 g), around which are inserted the open mouths of the so-called *hepatic vessels* (h). This portion of the canal may also be called the *duodenal stomach*, since it is the true chylic cavity in which digestion of the food takes place. It is lined with a very thick mucous membrane, of a distinctly glandular appearance, and which is more completely developed in this than in any other part of the alimentary canal. The muscular coat is also very strong and thick, and consists of two distinct layers of fibres; an internal one which is formed of longitudinal and circular or transverse fibres, both developed to the same extent, and an external one which consists of six longitudinal bands placed at equal distances around the canal, and continuous with those already described on the esophagus and crop. The *pylorus* is formed by a considerable thickening of the mucous membrane, with an increase of thickness of the circular fibres of the muscular coat, and a contraction of their length or circumference. To the stomach succeeds a narrow and very short intestine, the *ilium* (i), as observed by Burmeister in *Tenthredo nigra*.† In this part the mucous coat is less developed than in the stomach, with which it is continuous. The muscular coat is also composed of circular and longitudinal fibres, and it is covered by a very delicate external or *peritoneal* coat. It ends in a valve which divides it from the *colon* (j); a large obtusely oval cavity, situated in

the eighth segment of the abdomen. A remarkable feature, or peculiarity of this part, is the existence, around its posterior half, of six elongated oval structures (k), which are thick, opaque, and have a glandular appearance, but their use is entirely unknown. In this part the mucous, or internal lining, becomes very indistinct, and the muscular coat is much thinner than in the preceding part of the canal, although both layers of muscles are still readily observed. The transverse fibres are clearly shown to be connected to the six longitudinal bands by their forming arches, both anteriorly and posteriorly to the glandular bodies, which appear as if placed between them. They are very distinct in the interspaces between the longitudinal bands, and are, as it were, inflected around the glandular bodies. The colon terminates without a valve in a short straight *rectum* (l), which is composed of only one layer of fibres, the internal one; the other, which consists of the longitudinal bands, ceasing with the colon, the bands themselves being continued free from the colon to be attached around the sides of the anal segment, in which the rectum terminates. The use of this evidently appears to be to assist in the expulsion of the *fæces*. In the male insect, and also in the female, after oviposition, the arrangement of the digestive organs is somewhat different. The chylic stomach, instead of passing directly backwards, as in the pregnant female, to allow room for the immensely developed ovaries, is folded in large convolutions, and lies in the middle of the abdomen, while the colon is shorter, smaller, and of a more globular form, and, when nearly empty, the six glandular bodies project on its outer surface.

APPENDAGES OF THE CANAL.

SALIVARY GLANDS. (Fig. 6, 16, m.)—These consist of two sets, which are situated along the under surface of the cavity of the thorax, one on each side of the esophagus. They extend backwards as far as the posterior part of the mesothorax, and are formed of an immense number of round, opaque, glandular bodies, aggregated together into small clusters, which communicate by small ducts, inserted at irregular distances, with a long, partially convoluted tube, the common duct, or canal of the salivary organ; so that each organ resembles a bunch of grapes or currants. The anterior or excretory extremity of these ducts opens into the commencement of the alimentary canal at the back part of the pharynx (b); the distal extremity is obtuse, or cæciform (n), but receives a single very fine vessel, which I was unable to trace to its origin. Each of the globular bodies of these organs appears also to receive an exceedingly minute vessel. These glands lie very closely along the under-side of the thorax, and are not easily observed. The existence of these complicated organs in the perfect insect is somewhat remarkable, since we are not yet acquainted with any circumstances in its economy which seem to require so large a quantity of salivary fluid as these parts appear calculated to produce, excepting only that of its feeding upon the dry pollen of flowers, which possibly may require to be mixed with a large quantity of salivary fluid when masticated, and passed into the crop, before it is fitted for digestion in the proventriculus, and chylic stomach.

HEPATIC VESSELS (h).

These organs, the true function of which in insects is still much disputed, consist in this species

* Burmeister's Manual of Entomology (Translation), p. 348.

† Ibid. (Translation), p. 137.

of from ten to twelve distinct tubes, which are inserted around the alimentary canal, immediately behind the pylorus of the chylic stomach (g). They are convoluted around the stomach and ilium. Their free extremities are distinctly cæcal, from which I have been unable to trace any vessels. When examined by a highly magnifying power they exhibit internally an appearance as if thickly lined with small opaque glandiform masses, similar to what I have noticed in the same vessels in *Meloe*, and which I am inclined to regard as the secreting structures of these organs. Some, however, regard these masses as the granulated contents or products of the organs, but I am more inclined to regard them as parts of the structure of the vessel, from having noticed similar parts within the long salivary organs of the larva of *Papilio urticae*, the contents of which are not supposed to become coagulated.

NERVOUS SYSTEM.

The nervous system (Fig. 9, 10, 11) in the perfect insect, is composed of one double supra-esophageal, and of eleven sub-esophageal ganglia, connected together at certain distances by two intervening cords. The supra, and first sub-esophageal ganglia are situated within the head, and together constitute the brain of the insect.

The second, third, fourth, and fifth, within the thorax, and, with their connecting cords, form the true analogue of the spinal marrow of vertebrated animals, while the remaining ganglia, to the eleventh, or terminal one, are situated in the abdomen, and are, I believe, in this and other perfect insects, analogous to the *sacral, or caudal portion of the spinal marrow in vertebrata*. The double ganglion, which constitutes in insects the supra-esophageal mass (o), is described by Dr. Burmeister* as the *cerebrum*, and the sub-esophageal (1) as the *cerebellum*. But in reality the supra-esophageal mass is the analogue of the *corpora quadrigemina*, and the sub-esophageal of the *medulla oblongata* of vertebrata. For the sake of perspicuity, however, I shall continue to designate the former the *cerebrum*, but the latter I shall call the *medulla oblongata*, the true analogue of the *cerebellum* in insects being entirely absent.

The *cerebrum* (o) is formed of two rounded lobes, closely approximated, but distinguished in the median line by a deep sulcus, particularly on the anterior surface. The whole mass is slightly convex on its posterior, and concave on its anterior surface, and also on its inferior, which lies immediately above and upon the esophagus. The nerves which originate from it consist of the *antennal* (p), and the roots of the *vagi*, on its anterior; of the large or conglomerate *optics*, on its lateral (q); the minute, or *simple optics*, on its vertical (r); and of the origins of the *sympathetic* (s), on its posterior surface; while from its inferior lateral surface descend the two *crura*, or cords which connect it with the *medulla oblongata* (1), the first sub-esophageal ganglion, and thus complete with the cerebrum and medulla the nervous ring around the esophagus.

The *nerves of the antennæ* (p) originate from the lower half of the front of the cerebrum, at a short distance apart, on each side of the sulcus. At their base they have distinct ganglionic enlargements, which are in close approximation with the cerebrum. They are directed forwards to the an-

tennæ, and, as in all insects, as may be seen more especially in *Mariapoda*, are the anterior prolongations of the nervous columns. The *optic nerves* have also a ganglionic enlargement at a short distance from their origin, at the sides of the cerebrum (t), but they are again contracted before they arrive opposite to the margin of the cornea, where they are expanded into a fan-shaped bulb, with its posterior margin the longest. From the surface of the bulb proceed the filaments to the organs of vision (q), as described by Professor Muller in his paper on the sight of insects. The *nerves of the stemmata* (r), or simple optics, *nervi optici secundarii* of Burmeister, are three in number. They are arranged in a triangle, and arise by separate stems from the anterior vertical portion of the cerebrum. The two which form the base of the triangle are the posterior ones, and originate one from each lobe. They pass forwards and inwards, to the median line, until their extremities are very nearly approximated. The third nerve is situated in front of these, and arises very close to the median line. They are each covered with a thick choroid coat, and on the exterior of the head by a transparent cornea, and their whole structure leaves no doubt whatever of their true use as organs of vision. The roots of the *vagus*, and *sympathetic* nerves are observed only with great difficulty, and I have been unable to trace these nerves to their distribution, owing to their extreme minuteness. The *vagus* originates as in other insects, at the most inferior part of the anterior surface of the cerebrum, and the *sympathetic* by a single root from the posterior surface.

The *medulla oblongata* (1), or first sub-esophageal ganglion, is of a heart-shaped form, and gives origin to three pairs of nerves. The first is situated on the anterior surface, and is given to the sides of the mouth and lower lip. The second is a large pair, and supplies the mandibles, maxillæ, and their palpi, and is the analogue of the fifth in vertebrata; and the third pair is given to the muscles of the neck and sides of the head. From the posterior portion of this ganglion proceed the two cords which connect it with the ganglia of the thorax, and are continuous throughout the whole length of the body, and which, as will presently be seen, are of compound structure. When the cords have arrived at the middle of the prothorax, they are united by the second sub-esophageal, or first thoracic ganglion, which is of an oval form, and gives off three pairs of nerves. Two of these are small, and are given to the surrounding muscles; the other is large, and is given to the first pair of legs. The cords then diverge, and pass on each side of a central horny process of the meso-sternum, unto which some of the great muscles of the thorax are attached, and behind which they again approach each other, and are united by the third, or great thoracic ganglion, the largest of the whole system excepting the brain. This ganglion also produces three pairs of nerves. The first passes directly forwards, and is joined by a small nerve from the side of the cord (u), noticed by Burmeister in the larva of *Callosoma*, and also observed by myself in the genera *Oiceoptoma*, *Pro-Scarabæus*, *Creophilus*, *Lampyrus*, *Forficula*, *Acrida*, *Blatta*, *Panorpa*, and in some species of *Papilio Sphynx*, and *Bombyx*, and even in a rudimentary form in *Æstrus*, although Burmeister appears to think that these *connecting nerves* exist only in a few genera. After uniting with this nerve, the first nerve from the

* Manual of Entomology, translated by W. E. Shuckard, Esq., p. 272-5.

ganglion (v) passes forwards, and is given to the anterior pair of wings. The second pair from the ganglion is of small size, but the third is large, and passes directly into the haunches of the second pair of legs (w). The cords are then continued a short distance, and are again united by the large fourth ganglion, having previously given off, behind the third ganglion, the second pair of auxiliary connecting nerves (x), which, like the first, unite with the first pair of nerves from the next ganglion, and are given to the posterior pair of wings. Besides the first pair, the fourth ganglion gives off a second, third, and fourth pair. The second is very small, and is given to the lateral muscles; the third is large, and supplies the third pair of legs (y); and the fourth passes backwards, and is given, in conjunction with branches from the fifth ganglion, to the muscles which connect the thorax with the abdomen. The fifth, or last thoracic ganglion (5), is very much smaller than the others, and is situated at the posterior part of the meta-thorax. It is of the same size as the remaining ganglia, which are situated in the abdomen, and like them it gives off two pairs of nerves. The first are large, and given to the sides of the body; the second small, and directed diagonally backwards, and closely connected with the first at their origin. The remaining ganglia, with the exception of the eleventh, or terminal one, are situated in the first five segments of the abdomen, and distribute the same number of nerves as the fifth ganglion. The terminal ganglion is situated in the sixth segment. It is of a heart-shaped form, and is larger than the other abdominal ganglia. It is separated from the tenth only by a very short portion of cord, which in the female lies upon the commencement of the common oviduct (Fig. 13, 11), formed by the union of the oviducts from the two sides of the body, and immediately before a small vesicular appendage of the oviduct, the *spermathica* (Fig. 13 f). It produces but one large pair of nerves, which are the continuations of the nervous cords. These are divided each into three branches, which are given to the extremity of the alimentary canal, and the organs of generation.

STRUCTURE OF THE CORDS.—The compound structure of the nervous cords is very distinct throughout their whole length. It consists, as described by myself in the Philosophical Transactions for 1834, of motor and sensitive columns in both cords, closely approximated to each other. The sensitive columns alone possess the ganglia, which are exceedingly large, and lie nearest to the external surface of the body, and the motor nearest to the visceral, or internal surface. The motor columns are very distinctly observed while passing over the ganglia in the thorax, as well as those in the abdomen, and exhibit in this insect an appearance hitherto not observed in other species. When the motor columns are beginning to pass over a ganglion (Fig. 11), their diameter is slightly increased, but is immediately diminished again to the original size, after the columns have given off a nerve to unite with the nerve from the ganglion, to assist in forming the compound nerve of the body (z). This enlargement is greatest in the columns on the thoracic ganglia, but is equally well seen in those on the abdominal ones. This is particularly interesting, from its analogy to similar enlargements of those parts of the spinal cord in man, and other vertebrata, which produce large nerves to the upper and lower extremities of the body, and corresponds to the thence greater ne-

cessity for accumulations of nervous matter in those than in other regions. The nerves derived from these parts of the column appear to be formed both of the motor and of the transverse, or supposed respiratory; the latter nerves in this insect, and perhaps in most of the *Hymenoptera*, being closely united with the motor, while a distinct nerve, which is given off from the motor column at the anterior margin of each ganglion (&), unites with this and the nerve from the ganglion itself (z), to form the compound nerve, which is given to the sides of the body, so that in this insect, as in others, the nerves appear to be composed of three sets of fibres.

GENERATIVE SYSTEM.

The generative system occupies a large portion of the posterior part of the abdomen, and its external organs pass out of the body by a distinct outlet, beneath that of the alimentary canal. In the *male* (Fig. 12) it consists of a complicated "organ of intromission," with four glandular testes, with their ducts, which open into two very large *vesiculae seminales*. The *testes* consist of a larger and smaller pair. The smaller (a) are placed one on each side of the alimentary canal, and are each composed of about sixteen very minute, semi-opaque, rounded bodies, into each of which may be traced an extremely minute vessel. They are closely aggregated together, and are connected with one common duct (b); but whether directly, or by means of short separate ducts, I have been unable to ascertain. From these the duct passes down beneath the alimentary canal, becoming gradually enlarged in its diameter, until it enters the second, or larger testis (c), which is placed close to its fellow of the opposite side, beneath the alimentary canal, and with it forms one mass; but when separated, each is found to consist of a rounded body, composed of five lobes, or very short cæca, in the midst of which the duct from the smaller testis enters, and leaves it again at its opposite side, considerably enlarged; and, after making one or two foldings, which constitute the *effereutial vessel* (d), becomes much smaller, and enters, near the lower extremity of an exceedingly large, but short cæcal bag (e), the *vesicula seminalis*, which is folded so as to resemble a kidney, and is generally filled with an opaque white fluid. It ends in a short funnel-shaped duct (f), which becomes joined to the corresponding one from the vesicle on the opposite side, just before the two arrive at the base of the penis (g), into which they pass; but the canal in each remains separate until just before its termination at the extremity of the external organ, (h), where the two canals then form one short tube, or *ejaculatory duct*. The external organ is prehensile, and of a complicated structure, and is well supplied with nerves from the extremity of the spinal columns. It is situated beneath the last anal fold, and covered with a kind of preputian membrane. Its external sheath consists of two irregularly conical, two-jointed plates (i), convex on their outer, and concave on their inner surface, and surrounded at their base by a horny ring (k). Within these are two semicoriceous plaited membranes (l), folded together like a closed fan, and furnished at their posterior margin with hooks of a horny texture, which probably are used for prehension. Between these, in the median line, and nearest the upper surface of the organ, are two elongated muscular parts (m), which, when applied together, form a pointed body, and enclose between and beneath them the

ejaculatory duct (n), and which together form the true organ of intromission.

In the *female* (Fig. 13) the generative system consists of two ovaries, each composed of eighteen distinct tubes (a a), which occupy a very large portion of the abdomen. Each tube increases in size from its apex (a) to its base (b), and generally contains one nearly perfected, and six incomplete eggs in various stages, so that each female contains at least two hundred and fifty-two eggs; while the apices of the tubes always contain a granulous fluid, and are collected together in the median line in the second and third segments of the abdomen, beneath the dorsal vessel, to the under surface of which they are attached, as discovered by Professor Muller in *Phasma*, and other species. Each tube empties itself at its base into a common, or uterine cavity (c c), where several perfect eggs are often collected, when the insect has begun her work of oviposition. From this cavity of the ovary proceeds a short *oviduct* (d), which unites in the median line of the body with a corresponding one from the ovary of the opposite side to form the common, or *ejaculatory* oviduct (e), which, in *Hippobosca*, has been called by Burmeister the *uterus*; but in which, in *Athalia* the eggs are detained only a very short period. On the upper surface of the common oviduct is situated a small vesicular appendage, the *spermatheca* (f), which is the receptacle of the male influence during impregnation. At the termination of the duct is also a second appendage, the *poison gland* (g) of the *aculeate Hymenoptera*. It consists of an oval bag, connected by a very short neck with the termination of the common oviduct. At its upper extremity it receives two short, convoluted, cæcal vessels (h), which enter it at the same place as in the poison gland of the hornet. Dr. Burmeister* has suggested that the poison-gland may perhaps be an *urinary organ*, but its existence in *Athalia*, in which, as we shall presently see, the fluid excreted from it cannot be used as a means of defence, but is employed by the insect during oviposition, seems opposed to this opinion. The common oviduct terminates in a vaginal orifice, (Fig. 14) in the under surface of the seventh abdominal segment, at the base of the ovipositor and its appendages, which constitute the external organs of the female.

The *ovipositor* of this insect is an exceedingly interesting organ, on account of its peculiarity of structure. It is situated in the under surface of the seventh and eighth segments (Fig. 14, b c), or more correctly perhaps in the eighth, which appears to have been carried forward during development, and, obliterating the under surface of the seventh segment, is approximated to the posterior margin of the sixth (a a), the posterior border of which is notched, and has a small process on each side. Four of the tendons of the ovipositor are inserted into the connecting membrane between these segments (d). That this is what has taken place in the development of the segments appears evident from the existence of the dorsal and dorso-lateral surfaces of the seventh segment (b), while they are entirely absent on the ventral surface, unless, indeed, we consider the two rudimentary plates (e e) on each side of the base of the ovipositor as their analogues, and by which the obliteration of the ventral surface of the seventh segment is further proved.

The *vaginal orifice* (f) is situated a little poste-

riorly to the membrane which extends between and unites the tendons of the two saw-shaped organs which constitute the *ovipositor* (g). These organs are partially retracted within the body by means of eight tendons, four to each organ. The ovipositor is of a horny texture, and each half is pointed at its extremity like a lancet (Fig. 15), and is furnished on its superior margin with sharp-pointed teeth (i), directed backwards, and along its under margin (k), with about fourteen convex, slightly notched ones. On its inner surface it is slightly concave, with a shallow longitudinal groove, and on its outer surface (l), in the middle line, is a longitudinal ridge, from which extend many transverse ridges to the two edges of the instrument, so that on its outer surface the ovipositor resembles a *rasp*, while its edges are toothed and serrated like a *saw*, and its apex sharpened like the point of a *lancet*. Each half, or saw (Fig. 15), is formed also of two portions, united back to back, which thus form the ridge in the middle of the ovipositor. This peculiar and complicated structure of the instrument is rendered necessary, as will presently be seen, by the manner in which the instrument is employed. Posterior and external to the ovipositor are two obtuse processes (Fig. 14, h h) densely ciliated, and situated one on each side of the ovipositor. They appear to form the outer sheath, and direct the organ when employed in the business of oviposition.

OF THE LARVA AND NYMPH.

ALIMENTARY CANAL.—This is far more simple in the larva than in the perfect insect. In general appearance and structure it closely resembles the canal in Lepidopterous larva, both in the capacity and extent of the great digestive cavity and in the shortness of the esophagus and small intestines. The *mouth*, or entrance to the canal, is admirably adapted to the insect's usual mode of feeding, which is by devouring the edges of the leaf, and but seldom the upper or under surface, as is the habit of many other species. The *upper lip* (Fig. 18) is exceedingly short and of a heart-shaped form, and the *under* one (Fig. 17, 6) is long and projecting. Immediately behind the upper lip are two thick and short *mandibles* (Fig. 17, 3, and Fig. 19), a little convex on their anterior, but concave on their posterior or inner surface. Each of these has four indentations or teeth for masticating the food, the second of which is rather the longest. Posterior to these are the two *maxillæ* (Fig. 17, 4), or lesser jaws, which form the sides of the mouth, and assist in passing the food into the *pharynx*. Their extremities are developed in this larva into two large five-jointed conical *palpi* or feelers (Fig. 17, 5; Fig. 20), which are constantly employed by the insect as *tactors* during the time of its taking food. Behind these, and projecting far beyond them, are two other palpi, which are also five-jointed and of a conical form, and are attached one on each side of the *lower lip*, which is also long and projecting and forms the posterior part of the mouth. The inner surface of the lower lip is covered with a thick mucous structure, analogous to the tongue of other animals. This constitutes the floor of the mouth, and leads to the *pharynx*, a slightly dilated cavity, the proper commencement of the alimentary canal (Fig. 21). The posterior part of this is encircled by a nervous collar, formed by the *cerebrum* above and the *medulla oblongata* or first sub-esophageal ganglion below, as in the perfect insect. The *esophagus*, which is very short and narrow, commences at the posterior part of the *pharynx*, and ends at the anterior of the third segment

* Translation, p. 192.

in an immensely dilated cavity, the commencement of the true *digestive stomach*. The general structure of this part of the canal is the same as in *Lepidopterous larva*, and consists of a peritonæal, a muscular, and a mucous coat, as above described in the perfect insect. At its commencement it is furnished internally with a valve, which is formed by a folding of the mucous membrane, and a similar structure exists at its posterior or pyloric extremity. The stomach extends from the commencement of the third to the posterior part of the tenth segment, and occupies nearly the whole of the interior of the insect. It is followed by an exceedingly short *ilium*, which is separated by a valve, as in the perfect insect, from an immense *colon*, which is covered with the same glandular bodies as described in the perfect insect, but much less developed.

When the insect has enclosed itself in its cocoon (Fig. 4 and 5), before changing into a *nymph* or *pupa*, the first indications of change in the form of the alimentary canal occur in a constriction of this viscus at about its middle portion, a slight elongation of the *ilium*, and a contracted condition of the *colon*, as shown in the organ (Fig. 22), just before the insect has assumed the form of a nymph. These changes are followed by an elongation of the esophageal portion of the canal when the insect passes into the nymph state, and by a narrowing of what is to become the true digestive stomach of the perfect insect. These changes of structure in the alimentary canal of *Hymenoptera*, as in the *Lepidoptera*, take place less rapidly than those of the nervous system.

The *appendages of the canal* consists, as in the perfect insect, of two or more elongated *salivary organs* very similar to those of the perfect insect, except that, in the larva, they are considerably larger. I have been unable to observe exactly in what part of the mouth or pharynx they terminate. The *hepatic vessels* are exceedingly elongated, and are folded upon and around the posterior half of the stomach and the *ilium*, as in the larva of *Lepidoptera*. They are inserted into the canal at the very commencement of the *ilium*, immediately behind the pylorus.

The whole of the viscera are surrounded by immense accumulations of yellow fat, as in the *Lepidoptera*. The *generative system* in these states of the insect I have not examined.

The *nervous system* of this larva (Fig. 23) affords one or two remarkable peculiarities. It consists of the *cerebral* or supra-esophageal mass, and twelve sub-esophageal double ganglia and cords. The cerebral and first sub-esophageal ganglia are less closely united than in the perfect insect, owing to the greater diameter of the esophagus which they encircle. The condition of the *optic nerves* is very remarkable. They are nearly in as perfect a state in the larva as in the perfect insect, with one marked peculiarity. They are derived as usual from the sides of the cerebrum, but instead of being small, as in other insects, and divided immediately into six separate filaments, to be given to six minute sessile eyes on each side of the head, they form on each side a large single nervous trunk, which, as in the perfect insect, in passing outwards becomes at first a little enlarged and then contracted again in diameter, and is given to a large single eye, apparently furnished with a proper choroid, and covered by a single lens not divided into separate facets. This larva, therefore, possesses but two simple eyes, an instance of which I have not before met with in any other family of insects. The situation of the eye on the exterior of the head (Fig. 17. 8) is indicated by a small black spot. The reason for this deviation

from the usual distribution of the optic nerves in larva is not at present evident. Of the twelve sub-esophageal ganglia, the first, third, fourth and fifth are the largest. The first pair of nerves given from the third, fourth, and fifth ganglia are united with others derived from the sides of the interganglionic spaces of the cords, and are given to the wings of the perfect insect as in some instances among the *Lepidoptera*. The remaining ganglia, from the sixth to the eleventh, are small and elongated, and give off each only one pair of nerves; which, however, are immediately divided into two others. The terminal ganglion, which is larger than the preceding ones, gives off three pair of nerves, the two posterior of which, as we have before noticed, are united in the perfect insect. The double structure of the cords is easily observed on each of these ganglia (Fig. 24) as in those of the perfect insect. Very little alteration appears to take place in them during the development of the nervous system. In several specimens which I examined at different times during the winter, scarcely any change, beside a zigzag disposition of the cords and a slight enlargement of the thoracic ganglia, was observed, until after the insect had passed into the state of nymph at the end of April. Until that period none of the ganglia had disappeared, and only the fourth and fifth had become slightly enlarged. On comparing the nervous system of the larva with that of the perfect insect, it will be seen that only one ganglion, apparently the sixth, disappears during the metamorphosis; so that the nervous system of this insect appears, in almost every respect, to undergo less alteration in form in passing from the larva to the perfect state than in any other family of insects which undergo a true metamorphosis.

Having thus examined the structure of the principal organs of the body, I will now pass on to the consideration of the peculiar habits of this species. The perfect insect first makes its appearance about the middle of May, after the continuance of dry warm weather, and this usually happens to be a little before or at the time when the early crops of turnips, in some parts of the country, are just appearing. It is, therefore, at this period that the fly is able to commit the greatest mischief, by depositing her eggs on the young leaves, and which, if the weather continues warm and dry for a few days, become hatched, and the crops are soon destroyed. The period of the year and the temperature of the season greatly influence the growth of the insect in its larva state. Thus, if the season becomes cold and wet, the eggs are either retarded, or are not developed at all, or the young larva perishes. But if the weather continues fine, the eggs are hatched in about a week or five days, and the larva passes through its changes rapidly. There appear to be at least two broods of this insect during the year. From the eggs deposited in May and June the perfect flies are developed in July and August, and the broods produced from the last laying of eggs make their appearance in the perfect state about the month of May in the following year.

DEPOSITION OF THE EGGS.—Mr. Yarrell, in the paper above quoted, has noticed that the female deposits her eggs singly, about twenty in number, in the under surface of the leaf; but from what we have just seen in the pregnant ovaries this is very far from the whole amount deposited, which cannot be less than from two to three hundred by each individual, hence we cannot be surprised that when the insects are developed under favourable circumstances their devastations are so extensive. It was in a field of healthy white turnips which had been

sown about a month, that I first had an opportunity of observing the fly in the act of depositing her eggs. This was at Meon-Stoke, Hants, on the 26th of July, on an exceedingly fine morning, when the thermometer in the shade at eleven o'clock stood at 73° Fahr. There was a light westerly wind at the time, and the flies, which were then becoming very active, swarmed in the greatest abundance on the turnips, and extended over about an acre, at one end of a large field of about fifteen or twenty acres. They seemed to have arrived in a flight, and their numbers were evidently on the increase for some time after they were first observed. They certainly had made their appearance in this field only very recently, not having been observed there until the morning in question. It was remarkable also that at this time the great mass of them was confined almost entirely to the eastern end of the field, while there was scarcely a fly to be met with in the middle or at the western end. On the following day the flies had advanced further into the middle of the field, and a day or two afterwards there was not a fly to be seen at the eastern end, where they had commenced their ravages, the whole flight being then at the western end. Subsequently to this observation I had repeated opportunities of noticing in other places a like progressive movement of the insects, in flights or clouds, over certain portions of a field, apparently without the slightest reference to the direction of the wind at the time, although I could but remark that their progress in the above instance at Stoke, and also in one subsequently at Birdham, in Sussex, was from east to west. In the former instance I was informed that the insects had been abundant in a field at a short distance, in the previous summer. It was probable, therefore, that the insects had been recently developed. The males were readily distinguishable from the females by their smaller size, and as both sexes were equally abundant and active I had an opportunity of witnessing their pairing. During coition, which is exceedingly vigorous, and lasts only for a few seconds, the wings of the male are extended, and vibrated rapidly, and immediately before separating the extremity of the body of both individuals is in immediate contact, but only for a few seconds. The act always takes place while the female is seated on the leaf of a plant, and immediately before its termination the female passes hastily to the under surface of the leaf, drawing the male after her, and the two are immediately separated. The whole occurrence does not occupy thirty seconds at most. The male then takes flight, and the female proceeds to the next plant, and begins hastily to deposit her eggs. While watching the proceedings of the insect, my friend Mr. Wooldridge directed my attention to a female that appeared very busily at work, and, as it subsequently appeared, was then in the act of depositing her eggs. Soon after this I observed many others employed in a similar manner. The act of oviposition is commenced immediately after that of impregnation. It takes place in the following manner. Having perched herself on the upper surface of the edge of a leaf, and always with her body in the longitudinal direction of the edge, the insect inserts the point of her lancet-shaped serrated ovipositor between the edge of the cuticle on the under surface of the leaf and the parenchymatous tissue, and gradually thrusts her instrument deeper and deeper, until she has passed it into the leaf its whole length, and then with a sawing motion she cuts a little hole or cavity in the parenchymatous tissue, just large enough to receive a single egg, and at the same time injects into

it a fluid from the poison-bag. The use of this fluid appears to be to prevent adhesion from again taking place between the cuticle and parenchymatous tissue, since it does not induce a morbid growth in the leaves, as in the case of leaves punctured by the gall flies (*Cynips*), but only a slight secretion, and an enlargement of the space around the egg. Having withdrawn the ovipositor from between the parenchyma and cuticle, she passes an egg from the oviduct into the base of the ovipositor, along which it is conveyed, apparently with a spiral motion, into the receptacle, prepared for it in the leaf, and is there left. The insect then proceeds in the same manner to deposit a second, a third, and a fourth, always taking care to place only one egg in each receptacle, the bottom of which is about half a line from the edge of the leaf. The whole process of depositing an egg occupies about forty or fifty seconds. On many leaves I have observed but one egg deposited, but on others as many as eight, or ten, or even fifteen, in which case they are arranged around the edges of a leaf, as in (Fig. 2 aa). When only a very few eggs are deposited, they are generally placed on the leaflet, at the base of a leaf, and seldom at its apex. In those instances in which there are only one or two eggs deposited, they are generally in the leaflets. It is also worthy of notice, that the fly does not deposit her eggs indiscriminately on all the leaves of the young plant, but almost invariably on the second set, or four leaves after the cotyledonous leaves, but never, so far as I could discover, on the cotyledonous leaves themselves. Neither does she deposit them on the innermost or youngest leaves of the plant, which are rougher on their under surface than the outer leaves. Perhaps this avoidance of the youngest leaves may arise from their expanding too rapidly, and thereby interfering with the development of the ovum; while if the egg were deposited on the outer or cotyledonous leaves, it might not become hatched, and the larva make its appearance before those leaves had begun to decay, and consequently the food would not then be fitted for its nourishment. These circumstances are in accordance with the observations made by agriculturists, that the outer leaves of a plant are those first destroyed. The insect therefore feeds at first upon the parenchymatous structure of the leaf.

All this takes place during the hottest part of the day, while the sun is shining, and I have reason to believe that the eggs are not deposited at any other time. Although the insect in general is so intent on the business of oviposition that we are sometimes enabled to observe every step of her proceedings if approached very carefully, she is remarkably shy and fearful, and flies away on the slightest alarm; and when touched, or unable to make her escape, she drops on the ground like *Athalia rosæ*, with her legs and antennæ folded beneath her body as if dead; but after remaining entirely motionless, until the cause of alarm is removed, flies away as nimbly as before. When the weather is dull or cloudy, the insect remains quietly seated beneath the leaves of the plant, and appears exceedingly dull and spiritless. It is also beneath the leaves of the plant that the insect reposes at night, and three or four may sometimes be found under one small leaf. One circumstance which is not the least interesting in the economy of this species, is the regularity with which the insects proceed in flights across a field or district, in which they have made their appearance. This, as before noticed, was strikingly the case in the field in which we detected the insect depositing her eggs. Thus, on the second day of my observa-

tions, there were scarcely any insects left in that part of the field where I had first observed them; they were then at work in the middle of the field. On the third day they had proceeded still farther, and on the fourth day they had arrived at the opposite end of the field to that at which they entered. It may be said, perhaps, that these must have been different flights of these insects; but this I am satisfied was not the case, since scarcely an insect was then remaining at the spot where they first made their appearance. Beside which, from what we have just seen of the state of the ovaries, the number of eggs to be deposited being at least two hundred and fifty, and the time required for the deposition of a single egg being considerable, there are reasons for believing that the whole of the eggs are not deposited in one day, or perhaps even in two or three. This onward progress of the insect was subsequently observed on another occasion in a more marked manner in the month of August, when the insects were exceedingly numerous in one field; but in another, which was separated from the first only by a high hedge, there was scarcely a single individual. In a few days, however, they were almost as numerous in the second field as they had been in the first. If the weather becomes unfavourable, and there is a recurrence of heavy rain shortly after the insects have made their appearance, very many of them perish, and are found dead on the plants.

DEVELOPMENT OF THE EGGS.

When the egg is first deposited, it is discovered only with great difficulty, there being no other trace of it, when the under surface of a leaf is examined, than a slight elevation of the cuticle, and this elevation is frequently so very slight, that it is only by raising the cuticle with a penknife, and extracting the egg itself, that we can be satisfied of its presence. Within twenty-four hours this elevation is increased, and the egg, which at first is whitish and transparent, has become whiter and more opaque. On the second day the elevation is still further increased, and the receptacle itself is expanded, so that there remains a free space around the egg equal to about its own width on each side. This continues to enlarge, and on the following day, the contents of the egg, having become still more opaque, the outline of the future larva is easily seen through the cuticle, coiled up in a semicircular form; about the fifth day from the time of deposition the young larva makes its appearance. This is the progress of development if the weather continues favourable, but if it has been cold and wet, the progress is retarded. I first observed the eggs deposited, as above stated, on the morning of the 26th of July, and I visited the same field daily for four or five successive days. On the 29th there was scarcely a single perfect insect to be found; they had nearly all perished, having deposited their ova. But the weather had been very unfavourable, there had been much wind, and it had rained heavily during the whole of the preceding night, which probably had been the means of destroying many of the insects. On examining some of the plants at a spot where the flies had been most busily employed on the 26th, a very great alteration had taken place in the appearance of the eggs: both these and the receptacles in which they were placed being much enlarged. The receptacles were almost double their original size, and the eggs themselves, besides being enlarged, had become a little flattened, and the form of the embryo within was very distinct. On the 30th, many of the eggs were so far advanced that the motions of the larvæ within them were distinctly perceived, and I had no

doubt that had the weather continued favourable, many of them would have been developed within a few hours, but the weather during the preceding day or two had been exceedingly stormy. On the 31st, and following day the 1st of August, there was very heavy rain, and none of the larvæ had yet come forth. On the 3rd of August, when the field was again visited, most of the larvæ had been developed, but vast numbers of them had perished, and were found dead on the leaves of the plants. Thus, notwithstanding the state of the weather, it was only seven days after the eggs were deposited that the larvæ became developed; and, judging from the activity of the embryo within the egg on the 30th, being the fourth day after oviposition, there is reason to believe, that, had the weather continued fine, they would have appeared much earlier. On the 30th of July, I removed some of the plants with eggs deposited upon them, at the same time as on the preceding ones, to a dark out-house, so as not to be exposed to the open atmosphere, or the influence of the direct rays of the sun, and these did not produce larvæ until one or two days later. These facts appeared to show that the development of the eggs is very much influenced by the warmth and hygrometric condition of the atmosphere, and that a considerable amount of temperature is required for their speedy development. It has been stated above, that on the day when the eggs were deposited, the temperature of the atmosphere in the shade was 73° Fahr.; but when the thermometer was exposed to the sun on the earth, the mercury ranged from 90° to 100°, so so that the temperature to which the eggs in the leaves were exposed, must have been equal at the hottest, or middle part of the day, to at least 80° or 85° Fahr. On the two following days it was at nearly the same height in the middle of the day, while on the fourth day, July 29th, after there had been much rain during the preceding night, the highest temperature in the shade was 68°. On the following days the temperature was much lower.

THE LARVA.

When the period of development has arrived, the larva first eats its way through the thin shell, and then through the wall of the cavity, or cuticle of the leaf, which inclosed it, and begins immediately to feed upon the tender structure of the under surface, eating first the cuticle, and then the parenchymatous tissue, but it does not at that time pierce the cuticle of the upper surface; so that when the upper surface of a young leaf, which is attacked by many larvæ soon after their development, is examined, it has the appearance of being covered with minute brownish spots, which, when observed more closely, are found to be partial perforations of the leaf, covered with the sound cuticle of the upper surface. I captured one larva on the 29th, soon after it had left the egg. It was then scarcely half a line in length, and was of a greyish colour, with a black head. It had just been feeding, and had passed some fæces, but had not removed more than a line distant from the nidus which it had just left. It eats through the nidus in the middle of its most convex part, but it does not devour the shell of the egg which it has just left, like the larvæ of some *Coleopterous* and *Lepidopterous* insects. The empty shell remains in the cavity. Subsequently to this I obtained other larvæ, all of which exhibited the same appearance, and none of them at first removed far from their respective nidi. Within three days they nearly doubled their original length. At this time I observed, that when the larva is placed upon dry food, or upon a withered leaf which is not fitted for food, it descends to the ground,

and crawls to other food which is more fitted for it. I remarked also, that the larvæ at this period, like the larvæ of *Lepidoptera*, when shaken from the leaves of the plant upon which they are feeding, retain their communication with the plant, and reascend to their place of feeding, when the disturbing cause is removed, each by means of a fine silken thread, which it spins while falling, the same as is done by the larvæ of *Lepidoptera*. This means of regaining its former place is not possessed by the *older*, and nearly matured larva, which, like the perfect insect, is exceedingly timid, and when any cause of terror occurs, falls to the ground as if dead, but when its alarm has ceased, it reascends the plant by climbing up the stem or leaves. The first time the larva changes its skin is at about the fifth day after it has left the egg, but I regret that I was accidentally prevented from watching it closely through the remaining period of its larva state, so as to enable me to ascertain correctly whether it changes its skin more than twice afterwards, before it enters the earth to prepare for undergoing its change to the pupa state. I believe, however, that it changes its skin during the larva state three times, at intervals of from five to seven days, before it becomes full grown and ready to enter the earth. It is immediately after its last change of skin that the larva becomes most destructive. It is then nearly an inch in length, and generally lies coiled up on the upper surface of a leaf exposed to the hottest midday sun, and appears to be most healthy when most exposed to it influence. Its sooty black colour is a remarkable characteristic of this larva, and may, perhaps, be designed to preserve it from the scorching rays of the sun, in which it delights to bask, the same as the black colour of the skin of the negro is believed to protect him from injury by absorbing the solar rays in the burning climates of Africa and the Indies. The principle of its utility appears to be the same in the insect as in the human body.

It is an opinion entertained by some agriculturists, that when a brood of these insects has destroyed the whole of the plants upon which they were hatched, they migrate to other places, and that, although the white turnip is the plant upon which the larvæ are in general developed, having destroyed this, they then attack the Swedish turnips. I have not myself observed these migrations, although probably they sometimes take place, yet I suspect that this occurs but rarely. It is also supposed that the perfect insect does not deposit her eggs upon the Swedish turnips, but this is not correct. I have known them deposited both on the white and Swedish turnips in the same field. The natural food of the larvæ, and that which it seems to prefer, even to the leaves of the white turnip, is the common weed, *charlock*, the *sinapis arvensis*. I have found the larvæ in great abundance upon this plant, feeding both on the leaves and flowers. It is the remark of the agriculturist, that when this weed is growing in the same field with turnips, the insects attack it first, and that if there are any larvæ in a field of turnips where the charlock is growing, by far the greatest number of them are sure to be found upon this. My own observations are in confirmation of this opinion. Some have supposed that the larvæ always appear in different localities at exactly the same time, but this is not the case. Thus, in a field which I examined at the end of July, in the neighbourhood of Chichester, the larvæ were nearly full grown, and were in the greatest abundance, as were they also at Soberton, Hants, a distance of eighteen miles; while at Meon-Stoke, only six miles from the latter place, the perfect fly only was there to be found. This would account for the late

period at which the larva is occasionally found in some places. I have myself met with it in the first week in October, and I am credibly informed, that in the southern parts of Sussex, it has sometimes been found, after the occurrence of hoar frost, even at the end of October. At that season I suspect there are but very few specimens which have sufficient strength to enter the earth to undergo their transformation. On the 3d of October, 1837, after a sharp hoar frost in the morning, although a vast number of the larvæ had perished, and their bodies were still lying on the leaves of the turnips, there were many that had escaped. These perhaps had been on the under-surface of the leaves during the night, so that they were not exposed to the effects of radiation, as in the case of the other specimens.

THE NYMPH OR PUPA.—When the larva has become full grown, it enters the earth, to the depth of a few inches, to undergo its transformation. This takes place at an earlier or later period, according to the season of the year. In the summer months the change takes place very quickly; in the winter it is delayed, and does not take place until the following spring. When the second brood of larvæ, which are developed from the egg at the end of July or the beginning of August, become full grown, about the middle of September, they enter the earth, and form each a little oval cavity, similar to the cell formed by the larva of *Melolontha*, and remain in this cell, in the condition of larvæ, until the following spring, when each changes into a nymph, or pupa, and soon afterwards into the perfect insect. My friend Mr. Woodbridge has bred the perfect fly both from specimens which passed through all their changes in the summer, and from larvæ which passed the winter in their cocoons and were not developed into the pupa and perfect state until the following spring. Having confined about fifty larvæ at the end of September in a closed vessel, filled with mould, they all entered the earth, and formed for themselves cocoons, in which they remained in the larvæ state during the whole winter, and I could not discover a single instance of their having become pupæ at that season of the year. About the middle of the following April the bodies of the larvæ had become very much shortened, and on the 27th of April one of these larvæ had changed into a nymph. Within two or three days after this, the whole of them had undergone the same change. They all came forth as perfect insects between the 12th and 25th of May. Each cocoon is about half an inch in length, and a quarter in diameter. It is of a firm, coriaceous texture, like the cocoons of some of the sand-bees. Internally it has a silvery shining appearance, while externally it is so mixed with, and agglutinated to the soil that forms the walls of the cavity, that the cocoon looks like a rough little pellet of earth. In this, therefore, the larva passes the winter in a state of hybernation, like the larva of the *Cossus* and some other insects, and changes into the nymph state about ten days, or a fortnight, before the perfect insect is developed, as in the case of *Trichiosoma*, another family of the *Tenthredas*, which pass the winter in their cocoons in the open air, on the white thorn, in a state of larvæ, and only pass into the state of nymphs at the end of April, the perfect insects being developed in May. Perhaps this circumstance may in part explain the cause of the uncertain appearance of the insect in the perfect state; since, from its requiring dry and warm weather for its development, very few specimens in cold and moist seasons may become perfect; and hence, when there has been a succession of summers unfavourable to their development, but few specimens, perhaps, have made their appearance, the changes of those

specimens which were buried most deeply in the earth being either retarded until a following year, or altogether prevented, and the insects, in consequence, destroyed. I have been struck, however, with one circumstance connected with the development of these insects; it is the impunity with which they bear the severest cold of our winters, when inclosed in their cocoons in the earth. Every one is aware that the past winter, 1837-38, has been one of the most severe that has occurred for many years in the southern parts of this kingdom, yet not only have many specimens which I obtained in their cocoons from the soil of a turnip-field in January last been developed into perfect flies in the beginning of the present month (May 29th, 1838), but a few days since, on visiting the field from which I obtained them, I observed very many of the recently developed insects on the flowers and low grass in the hedges of the field, so that should the spring continue favourable to them, by the continuance of fine weather, until after the period of sowing the turnips, there is great reason to apprehend a repetition of their mischief.

MEANS OF PREVENTING THE RAVAGES OF THE INSECT.

From the foregoing observations it is seen that it is in the larva state only that the insect is really injurious. It is to this state, therefore, and to the previous embryo condition, that we ought chiefly to direct our attention, with a view of preventing its ravages. Very many experiments have been tried by various agriculturists, with a view of accomplishing this object, but scarcely any have yet been attended with even a moderate share of success. Some have attempted to destroy the larva by shattering unslacked lime, or coal ashes over the plants: but this has been found to be useless. The larva merely coils itself up, and rolls off the leaves uninjured. Others have shattered salt over them, but with no better effect. Another plan has been to drag a rope, held at its extremities by two men, across a field, by which means the larvæ were brushed from the plants, and wood ashes and quicklime were then shattered over them. This was believed to have been of some use, the insects were not so numerous after as before the experiment. But the only method which has hitherto been tried with any thing like a fair prospect of success, was that of my friend Mr. Osborn, of Birdham, in Sussex, and this certainly was the fact, that while his neighbours, who did not follow the same plan, lost their crops when attacked by these larvæ, he saved his. It was simply by turning six or eight dozen of ducks which are very fond of the larvæ, into the field, at the same time employing a boy to watch them, and to drive them to some water to drink occasionally. Mr. Yarrell notices a similar practice as having been followed in Kent. This course was certainly effectual; it saved the crop of turnips, but it injured the ducks for a long time, they became greatly emaciated, and suffered much from diarrhœa, but they ultimately recovered. One thing is particularly objectionable in the cultivation of the turnip when attacked by these larvæ—it is the practice of *hoeing* the crops, or thinning them. By doing this a very large quantity of turnips is purposely destroyed, and of course the quantity of food for the insect lessened, while the numbers of the insect are scarcely, if at all, affected by the operation, and consequently the remaining turnips become attacked in far greater numbers than before, and perhaps the entire crop is then totally destroyed. On these considerations many persons have very properly desisted from having their turnips thinned, or *hoed* as it is termed, when the insects are present. But it is not from the de-

struction of the larvæ, after they have become nearly full-grown, and when their work of devastation is becoming every day more and more apparent, that a remedy for this evil can be expected; it ought to be sought for before the insect has arrived at this period, when it is able to do so much mischief. We ought to attempt to guard against its coming ravages at a time while the crops are yet uninjured; and, when we bear in mind those circumstances, which we have just seen affect the insect greatly in its early condition, some success may reasonably be expected. We have seen that a cold and wet season is very unfavourable to the insect at the time of hatching; and I may here further remark, that this was well shown in the instance of the field at Meon-Stoke, where I saw the eggs deposited, and where, it will be remembered, it was stated, that just at the period of hatching the weather became unfavourable and wet, and many larvæ perished; and, as I subsequently found when I again visited the field in September, that although, as I had seen, the eggs had been deposited in this field in the greatest abundance, scarcely any larvæ had become perfected, so that this crop of turnips had been entirely uninjured. From these circumstances, therefore, I have been disposed to think, that if, *at the period when the yellow flies are observed on the crops*, the whole field could be well watered daily, or twice in the day, with seawater, or a solution of salt in water, the effect produced upon the development of the embryo would be similar to that of the unfavourable weather in the observations above detailed; that, in fact, the larvæ would either not be developed, or would perish soon after they have made their appearance. The application of the means here proposed would, without doubt, be a matter of some difficulty; but if, after a trial on a small scale it be found successful, a plan might be devised for carrying it into full effect. A watering barrel, similar to those employed for watering the roads in summer, might be used for this purpose, although I am well aware of the practical objections to its employment. One of these is, the injury that might be occasioned to the crops by the daily passing over them of the wheels and horses, but this objection would probably be lessened were the seeds to be *drilled in* at the time of sowing, as is done by some cultivators, instead of being sown by broad-cast. Sea-water, or a solution of salt in water, is proposed as most likely to be useful upon two considerations: first, from the known pernicious effect of saline matters *in solution*, upon most young insects; and next, the circumstance of a greater amount of cold being produced during its evaporation, while the means applied as a remedy for the insect would, on most lands, prove beneficial to the soil, and hasten the growth of the crops, it being only in the hottest and driest weather that a remedy against the insect is required. But judging from the previous observations, a full and repeated drenching, even with common water, for three or four days at the time the eggs are being developed, would probably be attended with beneficial results. These suggestions are offered to the consideration of the agriculturist with much diffidence; first, on account of the difficulty of applying them to their fullest extent; and next, in consequence of the necessity for employing them steadily for several days at, and for a short time after the period when the flies are observed in the field; and also from the circumstance, that if the means now recommended, be delayed until the larvæ are several days old, and have begun to show themselves by the devastations they commit, they will then perhaps be of little utility.

DESCRIPTION OF THE PLATE.

Fig. 1. *Athalia centifolia*, (perfect female), rather larger than the natural size.

2. A leaf of a young turnip plant, about a fortnight old, showing at *a, a* on the under surface of the leaf the deposited eggs of *Athalia centifolia*.
3. The larva soon after it has entered its last skin, represented about twice its natural size.
4. Cocoon of the larva (natural size.)
5. A section of the same, twice its natural size, showing the manner in which the larva lies folded up within it during its period of hibernation.
6. Alimentary canal of the perfect female insect magnified about ten diameters. (a). The pharynx. (b). The entrance into it of the salivary glands. (c). The dilated *esophagus*. (d). The crop. (e). The muscles, and the gizzard projecting into the crop. (f). The ventriculus, the chylific or duodenal stomach. (g). The pylorus. (h). Hepatic vessels. (i). The ilium. (j). The colon. (k). The glandular bodies on the colon. (l). The rectum. (m). Salivary glands. (n.) Their origin.
7. Section of the crop, gizzard, and upper part of the chylific stomach.
8. The pylorus, ilium and colon.
16. Salivary glands and duct.
- 9, 10, and 11. The nervous system. No. 10 magnified ten diameters. (o). The brain, or cerebrum and its appendages. (1.) The inferior portion of the brain, or *medulla oblongata*. (2 to 5). The thoracic ganglia, or true nervous column. (6 to 11). Its abdominal or caudal extension and ganglia. (p). Antennal nerves. (q). Optic nerves. (r). Stemmatic or simple nerves. (s). Origins of the sympathetic. (t) Enlargements of the optic nerves. (u). Anterior communicating nerves. (v). Nerves to the first pair of wings. (x). Posterior communicating nerve, and nerve to the second pair of wings. (w and y). Nerves to the second and third pair of legs.
11. Ganglion showing the motor columns, and nerves given off from it, at *z* and *&*, to form the compound nerve (*z*).
12. Male organs of generation. (a). The smaller testes. (b). The duct. (c). The large pair of testes. (d). The efferential vessel. (e). The vesiculæ seminales. (f). The approximation of their ducts. (g). Extremity of the penis. (h). Ejaculatory duct. (i). Outer valves of the organ. (k). The base. (l). The inner or prehensile valves. (m). The double organ of intromission.
13. The internal female organs of generation. (a a, b) The ovarial tubes. (cc). The uterine cavities. (d). The separate oviducts. (e). The common or ejaculatory oviduct. (f). The spermatheca. (g). The poison gland. (h). Its vessels. (10 and 11). The terminal ganglia lying upon the ejaculatory oviduct before the spermatheca.
14. External organs of the female. (a a). The base of the ventral surface of the sixth abdominal segment. (b). Lateral portions of the seventh segment. (c.) The eighth segment. (h h). The anal process. (d). The connecting membrane between the

sixth and eighth segments. (e). Rudimentary plates. (f). The vaginal orifice. (g). The ovipositor.

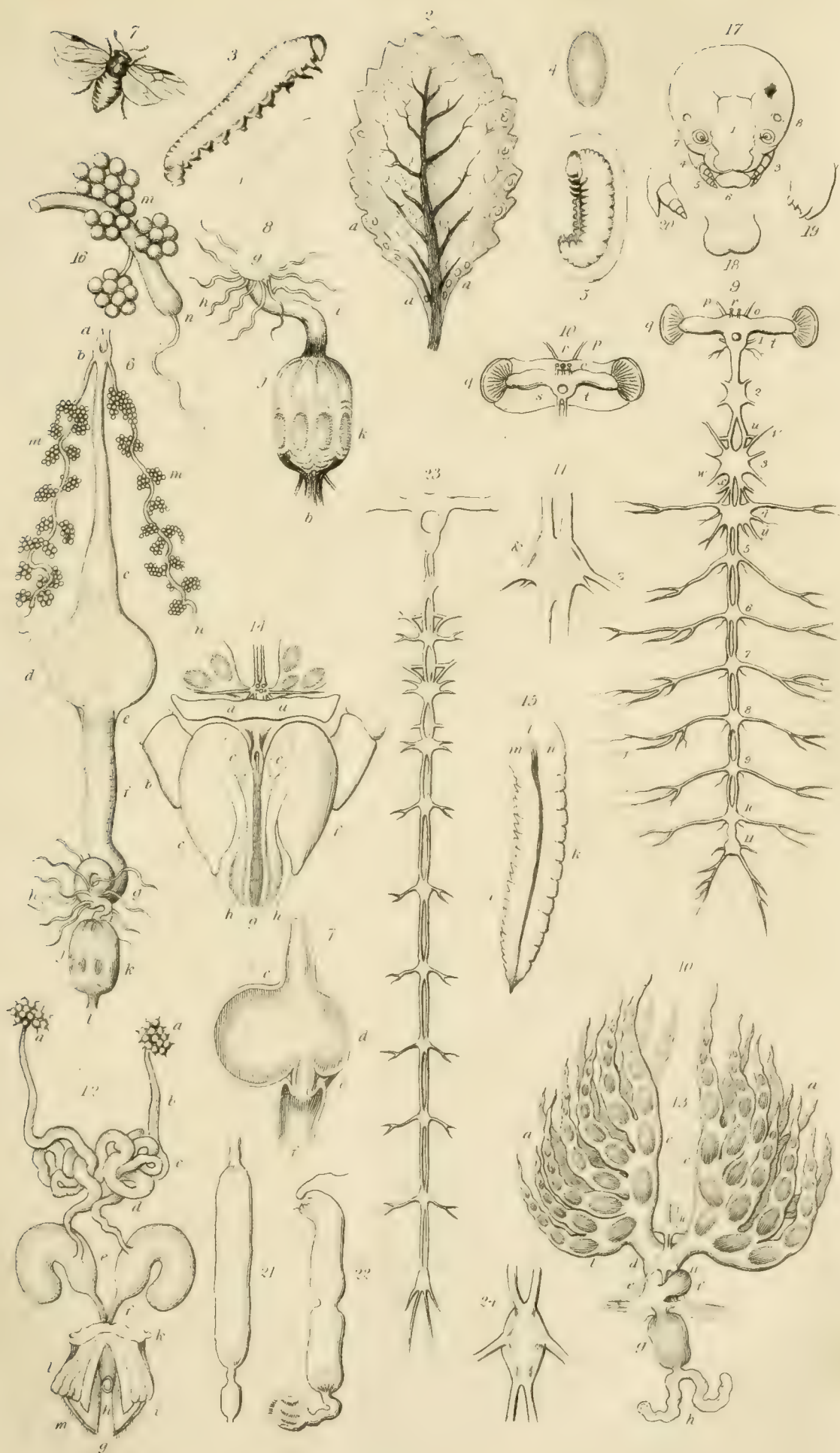
15. Lateral view of one-half of the saw-shaped ovipositor. (i). The superior serrated margin. (k). The inferior margin. (l). The ridge between the two parts of this organ (m and n).
17. Head of the full grown larva highly magnified. (1). The front. (2). The upper lip. (3). The jaws or mandibles. (4) The maxilla. (5). The palpi. (6). The lower lip.
18. The upper lip.
19. The mandible.
20. The maxilla and palpus.
21. The alimentary canal of the larva.
22. The alimentary canal of the nymph.
23. The nervous system of the larva magnified about ten diameters.
24. A ganglion of the larva highly magnified showing the motor columns.

ON ECONOMICAL FEEDING OF FARM HORSES, &c. &c.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—In perusing your number for the present month my attention was particularly struck with that part of an article written by George Legard, Esq, relating to his working horses: he states they consume two bushels of oats per week, each, besides chopped oat sheaves mixed with the corn instead of hay. I think, Sir, I shall be able to convince you and your readers by a few plain facts, that my horses cost little more than half the expense Mr. L's do. My usual plan for several years has been to give them cut *mown* oat sheaves and no other corn, (and we grow the straw very long), but for the last three or four years I have grown peas, which I cut up instead of oats, but finding they occasionally griped and did not otherwise appear to suit them, I now give them half oat sheaves and half peas cut up together by a chaff cutter fixed to my thrashing machine, we cut forty sacks per hour; they also have one peck of raw potatoes per week, each; occasionally a little nitre or common salt; they eat about two bushels per day each, besides a small quantity of clover last thing at night. The chaff should be moistened with water, and given in small quantities at a time; for want of this precaution many a lazy attendant calls out for more corn because they cannot keep their horses in condition. The above is a correct statement of the manner my horses live, and I think, there are few farmers who could wish to see their horses in better condition: they are constantly at hard work, for the greater part of my farm consists of a clay soil, and I seldom allow them to plough less than an acre per day, and at the present time for fallows six to seven inches deep; in the summer I keep them on tares, or lucerne, which I consider much better than tares.

I will now say a few words on another subject, that is, agricultural labourers' wages. I am very sorry to find by your pages that some persons have only been giving their able bodied labourers 9s. per week; is it possible that any person can have the hardihood to give a man who has a wife and four or five children with no other means of supporting himself and family the small sum of 9s. per week? When he is selling that portion of the produce of his farm, which is the poor man's principal support, for I will say



even 70s. per qr., can he lay his hand upon his breast and say I have done justly? I have acted uprightly, I have shown mercy?—Will he not rather have to say, “Behold the hire of the labourers which is of me kept back by fraud crieth: and the cries of them which have worked are entered into the ears of the Lord of Sabaoth—is not the labourer worthy of his hire?”—Then why do ye so? In this neighbourhood there have been very few instances of able bodied labourers with families getting less than 12s. per week for this two years past; ours is a large parish, and the principal employers generally consult together if they wish to have any alteration in the wages.

My opinion is, and I think it will be the opinion of all thinking men, who wish to have a day's work done for a day's wages, that the labourer should never have less than 2s. per day, when flour sells for 2s 9d. per stone, and 2s. 3d. per day if 3s. per stone, and so on in proportion to the rise or fall in flour. The present price where I reside is 2s. 10d., and we think of raising the wages to 2s. 3d. or 2s. 6d. per day; opposition has kept the price of flour down, which has been of benefit to the labouring classes. If you starve your labourer, or only give him half a meal, how can you expect him to do a fair day's work? Give him fair wages and you will generally find he will do his duty. Need the farmers of Suffolk wonder at their machines being broken when they are only giving 9s. per week? Not that I by any means justify such conduct; remove the cause of complaint, and your machines will not be broken. Out of ten or fifteen men I have scarcely one who would like to use the flail, I thrash every thing by machine. We have scarcely any out of employ, and hear of none or very few complaints. Hoping these remarks may be the means of benefitting some of the suffering poor,

I am, Sir, yours obediently, S. L.
Lincolnshire, Holland, Dec. 1838.

TITHE COMMUTATION.

Return, stating what has been, during seven years ending on the Thursday next before Christmas-day, 1838, the Average Price of an Imperial Bushel of British Wheat, Barley, and Oats, computed from the Weekly Averages of the Corn Returns.

(Published pursuant to an Act passed in the 6th and 7th year of the reign of William IV., entitled “An Act for the Commutation of Tithes in England and Wales.”)

Wheat.	Barley.	Oats.
s. d. 6 6½	s. d. 3 9½	s. d. 2 8

WILLIAM JACOB,
Controller of Corn Returns.

Office of Controller of Corn Returns,
Board of Trade, Jan. 3.

The Average Price of Corn, per Quarter (Imperial Measure), in England and Wales, for the Quarter ended Christmas, 1838.

Wheat	Barley.	Oats.	Rye.	Beans.	Peas.
s. d. 72 6	s. d. 33 9	s. d. 23 11	s. d. 41 4	s. d. 40 3	s. d. 42 8

WILLIAM JACOBS,
Controller of Corn Returns,
Office of Controller of Corn Returns,
Board of Trade, Jan. 3.

TITHE COMMISSION.

31ST DEC. 1838.

COUNTIES.	Notices of Meetings.	Agreements.		Apportionments.	
		Received.	Confirmed.	Received.	Confirmed.
Bedford	28	16	8	2	..
Berks	116	33	16	2	1
Bucks	74	29	15	6	1
Cambridge	74	33	23	5	2
Chester	289	128	88	32	11
Cornwall	156	24	21	4	..
Cumberland	88	25	17	7	1
Derby	135	31	15	6	3
Devon	393	104	76	15	2
Dorset	216	104	72	20	4
Durham	237	109	80	34	18
Essex	311	162	119	27	5
Gloucester	162	77	54	24	7
Hereford	162	45	34	14	2
Hertford	100	51	38	6	3
Hunts	31	19	11	4	3
Kent	216	65	43	15	3
Lancaster	280	99	54	13	3
Leicester	66	16	9	5	1
Lincoln	254	96	55	31	13
Middlesex	23	7	6	3	2
Monmouth	97	24	13	3	1
Norfolk	555	283	197	76	27
Northampton	71	23	13	8	3
Northumberland	393	58	14	8	4
Nottingham	66	28	17	2	1
Oxford	83	21	12	6	1
Rutland	24	9	8	3	..
Salop	273	105	70	27	11
Somerst	422	193	146	48	24
Southampton	227	94	53	18	7
Stafford	170	67	47	20	1
Suffolk	384	194	120	37	12
Surrey	95	26	16	7	3
Sussex	219	67	39	8	3
Warwick	85	25	11	5	2
Westmoreland	64	31	12	4	1
Wilts	222	83	67	24	8
Worcester	100	36	22	2	..
York :					
City and Ainsty	13	5	4	..	..
East Riding	97	34	21	11	4
North Riding	280	105	68	32	15
West Riding	260	66	36	13	4
WALES.					
Anglesey	38	..	..	..	..
Brecon	68	20	8	2	2
Cardigan	82	24	11	2	..
Carmarthen	73	32	19	3	1
Carnarvon	57	3	..	..	..
Denbigh	90	18	14	8	2
Flint	39	17	10	4	1
Glamorgan	87	18	11	..	..
Merioneth	32	13	8	..	..
Montgomery	74	13	8	..	..
Pembroke	115	51	32	6	1
Radnor	37	18	9	1	..
Total	8403	3077	1990	663	224
Deduct last month	8255	2894	1858	597	154
Total in Dec...	148	183	132	66	70

TURNPIKE ROADS AND RAILWAYS.—The debts due upon turnpike-roads in England and Wales amount to upwards of eight millions and a half; for a great portion of which a very fragile security will remain when railways (if ever) come into full operation.—*Morning Herald*.

TO THE EDITOR OF THE INTELLIGENCER.

SIR,—My lately written address to the commercial community of Great Britain on the corn laws having been published as well as by Longman and Co., of London, by Messrs. Baocks and Co., of Manchester, it has probably been read by some of those who attended the late meeting upon that subject of the Chamber of Commerce of that town, or by persons who have read a report of what happened at that meeting; and I fear that after the speech of Mr. J. B. Smith, as reported in the Leeds Mercury of last Saturday, my statement of our foreign trade will not be credited. Mr. S. is reported to have said—"The effects of excluding foreign corn had been to induce foreign nations to impose heavy duties upon our manufactures. We had disregarded their remonstrances against our unjust exclusion of their produce in exchange for ours, and we might now turn to look at the effect of our selfish policy. In 1820 we exported to Russia 13,203,857 yards of cotton cloth; in 1837 our exports to that country were reduced to 847,022 yards only (*hear, hear*); in 1820 we exported to Prussia 5,442,535 yards of cloth, now we export not a yard (*loud cries of hear, hear*); to Germany, in 1820, we exported 47,658,285 yards; in 1837 our exports to that country had fallen off to 38,581,533 yards." On reference to Mc Culloch's Statistical Dictionary I find the official value of cotton goods exported by us in 1820 was 22,531,079*l.*; the increase has been gradual and tolerably regular to 1834, when it reached 51,069,141*l.* Beyond that year he does not go. The declared value was, 1820, 16,516,758*l.*, and in 1834, 20,513,586*l.* It is possible, to be sure, that both his and my statement may be true, but the inference to be drawn from them are quite opposite, and therefore they cannot both be correct. I intended to show, in which I hope I succeeded, that our trade with the corn-growing countries had greatly increased of late years. The natural conclusion to be drawn from Mr. Smith's speech is, that it had very much diminished. I have said at page 15, that "in the last seven years, during which we had scarcely imported any corn, Russia has increased her account with us for manufactured goods, from 1,849,424*l.* to 2,376,799*l.*; Germany from 7,443,714*l.* to 8,678,669*l.*, and with America the increase has been from 6,694,695*l.* to 14,198,900*l.* sterling." This is a copy of a parliamentary return, and is therefore entitled to some respect. But I will now bring a little further proof of facts which I should have thought had been well known to gentlemen composing "the Chamber of Commerce at Manchester," who, from the high sounding title assumed by that society, and the great respectability of that town, I supposed had been composed of men of intelligence and liberality, who would not have cheered such statements as those made by Mr. Smith. There is not a greater fallacy, I think, than that we are in a state of barter with other nations. Does any English gentleman, when he drinks his claret, champaign, or his brandy, inquire whether the nation from whence they come takes our cloth, our cotton, or our hardware in exchange? He does not; but if he did, he would learn that the French, from whom these luxuries come, take for them annually about a million of our gold, and in return they exclude from their shores all the woollens and worsted stuffs of Yorkshire, all the cotton manufactures of Lancashire, all the cutlery and steel goods of Sheffield, all the hardware of Birmingham. These are not excluded because of our corn laws, for France has no corn at any time to spare; it is done to encourage her own manufactures. But to return to the question whether the corn growing countries do or do not take the produce and manufactures of this country, though we have corn laws excluding their corn when we have plenty of our own growth.

It would almost appear the less corn we take from them the more they take of our manufactured goods; this cannot be; but official returns shew that it is not contrarywise. I subjoin an extract from official docu-

ments shewing the quantity of wheat imported and the quantity of manufactured goods exported for eight years, from and to the corn growing countries:—

Foreign and Colonial Wheat brought into consumption.		British and Irish produce exported to countries from which corn is usually imported.
YEARS.	QUARTERS.	VALUE.
1829	1,364,220	£20,387,316
1830	1,701,885	20,699,022
1831	1,491,631	23,533,136
1832	325,435	26,882,959
1833	82,346	27,610,604
1834	64,653	28,855,141
1835	28,413	26,897,431
1836	very little—quantity not known.	
		32,828,039

This increase has taken place since 1828, when the present corn law was enacted; how then can it be said to have a tendency to diminish the trade of this country with the corn growing nations?

I know nothing of the Manchester Chamber of Commerce, but I will suppose their President heard me lecturing at St. Petersburg on the Downfall of the Manufacturing greatness of England. As this would be glad news to Russian ears, my room would probably be full, and when I told them that in proof of my position I could state that, for every hundred, or perhaps thousand, of yards of cotton cord which was made in 1820, not more than one was at this time made. I should, perhaps, be loudly cheered, but not, I think, by the President, nor by any other honest Lancashire or Yorkshireman.

I am, Sir, your obedient Servant,

JOHN BAKER.

ON NEW BREEDS OF SHEEP.

TO THE RIGHT HONOURABLE LORD WESTERN.

MY LORD,—The importance of the subject, I trust, will be accepted by your lordship, as an apology for a "Tenant Practical Farmer" addressing you. Having read your lordship's letter to Earl Spencer, on your newly created breed of sheep with much interest, and having made enquiries of some of my friends who attended the Smithfield Show, with a view of eliciting their several opinions on the carcase, wool, &c. of the same, I beg to inform your lordship, that the conclusion arrived at is unanimous to this point, viz., that your first cross, is a good profitable sort of sheep for pasturing; but that in your second cross, by returning to the merino, you have introduced too much of its characteristic, consequently the first cross is much preferred; this is precisely as I should have expected, but if you have produced a good sheep by the first cross, there is no reason why you should abandon your purpose, because you have made one false step, and which in all probability you were induced to do, by the mistaken notions of theoretical breeders.

I have been labouring for eight years on a cross between the improved Cotswold and South-down, and have now established a distinct breed from any sheep I ever yet saw; a breed, I now (as often through these pages I have done before) maintain, superior in every way to both parent breeds, more particularly as regards the quality of the mutton, quantity, and marketable value of the wool, and I have perpetuated this breed for several years, by coupling first crossed ewes, with first crossed rams; this plan I was told by many a self-sufficient theorist, was founded on the most erroneous principles, but never one of them could tell me where the error lay, beyond the generally received opinion "that you must not go further than the first cross." Living in the very heart of the best Hampshire down breeders, I was a marked man for their laughs and jeers, for what they termed my mad way of pro-

ceeding; it is perhaps to this, that I am in the main indebted for my *complete* success. Ever open to reasonable argument, I opened my ears wide to hear, but none was advanced; nothing beyond the assertion "that every one said it would not do," could I collect from them; then said I, "Here is one before you, who, God willing, says it *shall* do"; and on I went, on the following plan, until now, in the year 1839, I have one hundred shearling ewes, that on the first of May, I will show AGAINST ANY IN ENGLAND, upon equal terms, viz., always to have folded on arable land, and never to have eaten artificial. I selected those ewes of the first cross, which possessed the *symmetry*, description of *wool*, and *colour of face*, which I had formed in my mind's eye as desirable, and coupled them with a ram of the *same degree of cross*, exactly corresponding in these points; the result has been what every reasonable man would anticipate, a fast approach to a uniform appearance, and a distinct breed from any in existence, at least, I can find none which has been bred in like manner, or possessing the same qualities.

In this manner, and only in this manner, I respectfully submit, your lordship may perpetuate your first cross, should it be now to your taste, without having recourse to any pure blood on either side; and should there be at any time a necessity for change of blood, (which is often more supposititious than real,) it is easily effected by coupling the original producers of the cross, should there be no other cross bred flock to change from.

From the eight years' experience of crossing, I am confident, the system has very rarely, if ever met with a fair trial; the difficulties to overcome, are both numerous and formidable, and must be assailed by a determined perseverance, and unwearying patience; you have to conquer the sticklers for "time honoured breeds," deep rooted prejudices of friends, neighbours, shepherds, and dealers, and having done this, it requires constant care and watchfulness, in bringing together the proper male and female; and *personal* superintendence, to counteract the prejudice, obstinacy, and too often wilful attempts of your shepherd, to thwart your purpose. Before these powerful opponents, my lord, many a valuable experiment has fallen, as it were in its very hour of birth, and let the attempt at introducing any new character into a breed of sheep, be ever so justifiable, from the altered circumstances of a country,* and the result ever so successful, it requires a phalanx of noblemen of your lordship's character and influence, to battle with ignorance and bigotry, before a road can be cleared, for an impartial public to decide on its merits.—I am, my lord, with respect,

J. T. TWYNAM.

Whitchurch, Hants, Jan. 9.

THE MANGEL WURZEL POTATO.—Yesterday was exhibited to us a fine specimen of this species of potato, grown on Lord Ormonde's estate at Garryricken, by Mr. M'Emery. We understand 168 of them, weighing *eight stone and a half*, were grown by him this season, from two potatoes, cut into thirty-three seeds, and sowed a foot and a half asunder, in drills three feet apart. They were in all other respects treated like an ordinary drilled potato crop. Many of them attained an enormous size, and the smallest was equal to that of a large potato of the usual kinds. The produce rated at more than 200 barrels the Irish acre. From its great fecundity, the ease with which it is grown, and the little liability there is to failure of the crop, this root is likely to become a valuable addition in the green-cropping system.—*Kilkenny Moderator*.

* The different descriptions of wool now required by our manufacturers, the immense annual increase of clothing wools from abroad, and the greater capacity, from improved management of our arable farms sustaining a larger breed of sheep, I submit, fully justifies my own cross.

PLAN OF THE SOCIETY OF LAND AGENTS AND SURVEYORS FOR MANAGING THE HIGHWAYS CONSIDERED.

SIR,—I have perused with much interest your report in last week's Paper, of the anniversary meeting of the Land Agents and Surveyors, and request a small portion of your columns to express how far I agree with, and in what I dissent from, the petition of this intelligent body of men to the Commons House.

That the office of surveyor of the highways has been executed from time immemorial in a most slovenly manner, no one conversant in parochial affairs will deny, and though an Act which a few years since abolished the statute team duty, and substituted a money payment, is a great amendment on the old system, yet much remains to be done; partiality, favouritism, and jobbing prevail to a great extent, and I know no better mode of curing the evil than by consolidating the repair of parish roads in the same manner as relief to the poor has been done, if it can be effected by the guardians without the creation of new appointments. The great fault of the new poor-law system, which upon the whole I grant works well, is the substitution of too many paid officers to perform that which was heretofore done gratuitously, or nearly so. The clerk, the relieving officer, the master and matron, the porter, the schoolmaster and schoolmistress, the auditor, the treasurer, the chaplain, all draw salaries from the Union, and if a tribe of the like officials is to be paid for overlooking and amending the roads of half-a-dozen or half a score parishes, it will be a great tax on the inhabitants, and increase a patronage of which the Board of Guardians have already too large a share. If the roads of a union can be managed by a single officer at a moderate salary, which I think very practicable, it will be a great improvement on the present mode.

But that railroads should be called on to assist the trustees of a turnpike road, because the railroad has caused much less wear and tear on the turnpike, is absurd and unjustifiable; no turnpike bill has ever exonerated parishes from repairs, in such proportion as the magistrates of the district from time to time appoint. The legislature have granted tolls, not for the common repair of a highway, but as the preamble to most turnpike bills sets forth, "for the altering, widening, straightening, amending, and improving" roads, and maintaining those where the traffic is increased beyond that of the local population; the ordinary repair of them remaining till lately with the respective parishes. The railway takes away all *extraneous* passengers and distant traffic, leaving the roads as they were in long gone-by times, before the formation of turnpike roads, to the almost exclusive use of the neighbouring inhabitants. The use of the great roads in the neighbourhood of a railway is certainly much diminished, the tolls are lessened, but the repairs are light in proportion; the trustees, if they have it not in meal have it in malt, the interest of the debt is certainly not lessened thereby, but the debt in too many instances has been created as much to gratify the caprice of some great men of over preponderating influence at the meeting of trustees, as for works of public utility; this and the salaries of clerk, treasurer, surveyor in chief, sub-surveyor, and other officers, and meeting more frequent than necessary, have swelled the expenses. I lend money on a road-side well frequented inn, to near its value; a railway, canal, or a new line of road takes away the trade of the inn, reducing its value to a mere private dwelling in a lonely situation; am I entitled to ask the railway, the canal, or the new trustees, for a compensation? if so, railways can fairly be then taxed, but not otherwise; neither ought the creditors of toll-gates to complain, few, if any, have lent their money from patriotic motives, but because a higher interest was offered, and more punctually paid, than from loans of a different and better secured kind. Let the creditor be satisfied with his diminished receipts, and exclaim with Macbeth,

"I have lent my money on a cast, and I must stand the hazard of the die." Forty years ago, when the Grand Junction Canal was formed in this district, a great outcry was raised, that from the disuse of waggon-horses no market would be found for the produce of the land, or any tolls for reparation of the roads. The heavy stage waggons have ceased to run, and their horses to eat hay and beans, yet has corn doubled its value, and improvement continues to be made on the roads. If railways are taxed let canals be taxed also.

On the other petition of these experienced gentlemen for rating tenements of 3l. and not more than 10l., to the landlord instead of the tenant, I will be more brief. Those kind of cottages are for the greater part built by speculators for the sake of large returns on their outlay: a common argument when stipulating for a large rent, is, "you will have no other payment, this is not rated," and the remission of the rate goes not into the pocket of the cottier, but his landlord. There can be no reason why the owner of thirty or fifty cottages should be screened at the cost of other proprietors not so wealthy as himself. Let the landlord be rated in the way proposed, and the impost falls on him, not the tenant.

I am your's, &c.

JOHN O' THE CHILTERN.

Chiltern Langley, Herts, Jan. 8, 1839.

THE CORN LAWS.

TO THE EDITOR OF THE HEREFORD JOURNAL.

SIR,—“The English corn laws have compelled the Belgians to protect themselves by the establishment of manufactories, and unless measures are taken to relieve our trade from trammels that now affect it at every step—but more especially by the total abolition of the corn monopoly—we shall soon make the sad discovery that English manufactures cannot successfully compete with those of Belgium in any continental market. For this our manufacturers will have to thank the dunder-heads who so faithfully represent the corn monopolists in the House of Commons. Had Belgium a profitable market for her fleeces and her wheat, her population would never dream of exchanging the crook and the plough for the spinning jenny, the loom and the forge.”

The above paragraph has appeared in *Galighani's Messenger*, as copied from the *Sun* newspaper. Now sir, one would suppose from reading the above, that Belgic manufactures were quite of recent introduction, and caused by our corn laws; there appears at least, a want of truth, or a want of knowledge in the writer of the above extract from the *Sun*. I have by me a “Belgian almanack for 1839, published by the National Society for propagation of good books,” wherein it is said that “*M. Lievin Bawins, de Gand, importa en 1800, sur les Continent le premières machines Anglaises à filer le Coton.*”—Thirty-eight years have been passed in improving and increasing the manufactories not only in Belgium but elsewhere. The same authority says, they have in manufacturing steam-engines above 18,000 horse power; this of course cannot be called a recent introduction. Now sir, it may be recollected by those who have thought on the subject, and are thirty years old, what a hue and cry was raised to allow machinery to be exported:—well, it was exported, and has been, until France finds she knows as much about machinery as we do, and now in reciprocal kindness requires 35 per cent. upon the introduction of machinery; just in as much kindness as she would upon corn, wood or any other article in trade or life, she found we could not do

without, and Belgium of course must follow her example; and when once England relies wholly upon foreign supplies for her daily bread—she may rest assured a heavier tax will be put upon it by Russia and other countries than our corn monopolists, as we are termed, can possibly do. In the month of November last, I made my passage in the *Soho* steamer for Antwerp; what will the writer of the *Sun* think, when he is told that the deck of the vessel was covered with, and a large quantity in her hold, of English wool, for the Belgian manufacturers, and with coffee and iron she was deeply laden, all for Belgium—and respecting wheat, the markets here have rose, are rising, and will continue to keep up; and curses may be heard in the poor quarters, the estaminets, and drinking shops, against “Heretical England” as we are termed by the *Almanack Belgique*—as being the cause of the increase of the price of bread to consumers. Speculators may rejoice, it is true, here as well as in England—for they make more profit than the farmer; but not only are these curses heard in Belgium, but they may be heard by the purchasing consumers of bread in parts of Germany against England; the real facts of the case may be stated in a very few words. The whole of Belgium, as well as the whole of Germany, is in a thriving, increasing state. Population naturally increases; Belgium population has increased in a larger proportion; Germany also increases in a less degree. The increase of cultivated land has not kept pace with population—hence a rise of price in all articles of food. Now the price of meat at Brussels is 5d. per lb.; Ardennes mutton and pork 6d. to 6½d.; bread a trifle more than 2d. per pound, best wheaten. I feel thoroughly convinced I could live as cheap at your city of Hereford as I can here; it may be replied that wine is cheaper—so it may be, but real good sound cider, is preferable in every respect to four fifths of the low-priced wines. My main object is to undeceive many in England, who believe by reading certain newspapers, that a repeal of our corn laws would produce rejoicings all over the continent, and increase our trade; from what I have seen and known, it will do neither one nor the other—the continental nations will do as they did before, make what use they can of us, to serve their purpose, and when that is done, like France, they will clap a duty of 35 or 60 per cent. on our manufactures the day after: but it is also England's duty to think beforehand of the day after—to act justly to other nations, not forgetting the greatest of all duties, the duty to ourselves.—I remain sir, yours, &c.,

A LAND PROPRIETOR.

Bruxelles, Dec. 6.

QUERIES RESPECTING ITALIAN RYE-GRASS.

1st, Will it do to sow in the spring with a crop of barley, or other grain, as we now sow the common rye-grass? 2d, With or without a mixture of clover seeds? 3rd, Would there not be a danger of its getting up so high, so as to injure the crop of barley; and would it not smother the clover in the first year of seeds? 4th, Is it an annual, a biennial, or a triennial plant? 5th, Is it a fit grass to mix with others for a permanent pasture? 6th, Or would it be better to sow it alone? 7th, Will it do to mow for hay, and also to graze? 8th, What description of soil is it best adapted for? 9th, Will it succeed on strong land with a retentive subsoil?

SMITHFIELD MARKET.

SIR,—In common with many of your agricultural readers, the Great Christmas Cattle Show induces me annually to quit for a few days the quiet of the country for the never-ceasing bustle of the great metropolis of this mighty empire. My predilection for breeding and grazing, independent of my business, always leads me to that emporium of confusion, Smithfield Market, where I found, as usual, abundant reason to murmur at the wretched state, and vile treatment of great numbers of fine animals that had been perfected by the grazier at great pains and expense. The loss to the owners of this valuable stock, and the depreciated quality of the meat to the consumer, in consequence of the confined space of the market, must be immense. If, under some tyrannical power, an order was made to provide a place for the cattle sent to London for sale, where the property of the grazier should purposely be materially injured, and depreciated in value, and where the cattle would be subject to the greatest cruelty, I consider Smithfield would be found on examination, on any day when there was a full market, to possess every requisite for such an unholy purpose. The apathy of the agricultural community on this, as on many by-gone occasions, is truly astonishing.

After witnessing the confusion which prevailed generally throughout the stands of beasts, I turned towards the sheep-pens, where, on inquiry of several salesmen, I learned that the sheep are worse off than the beasts; and I found many of these gentlemen, who some time since opposed the abolition of Smithfield Market, are become decided converts to the necessity of its entire removal to some more spacious and convenient site.

I was surprised to find, too, that the number of sheep-pens have, in the recent alterations, been materially curtailed; the present number of pens being only 1258, are found quite inadequate to afford anything like sufficient room for three-fourths of the sheep frequently sent to this market.

I was informed, from the very best authority, that, at this season, after making allowance for the slips to gain approaches to the back pens, and many small pens that will only hold six or eight, the average number will not hold more than 15 or 16 sheep. This latter number multiplied by 1258, gives bad accommodation for only 20,128 sheep. In the name of common sense, what do the City authorities purpose doing with upwards of 30,000?—which number I find, on reference to the returns, have been sent to Smithfield for several Mondays in succession. I find, too, that the City have taken a most unpardonable and paltry advantage in the late arrangement of the sheep-pens; they have within a few years, made repeated applications to parliament to authorise an increase of the tolls, and to enable them legally to take tolls in that part which they have purchased, and added to Smithfield. In these attempts they have hitherto been frustrated; but, they have now, by a little double dealing, effected their purpose, by diminishing the size of the new pens, and now charge the same amount for a pen that will barely hold 16 sheep, as formerly they did for one that would well accommodate 20, to the great inconvenience of salesmen, and detriment of the grazier.

These City gentlemen with their committees and meetings have outwitted us countrymen. The Smithfield Club are looking out (certainly not before it has been rendered quite necessary) for more capacious premises to hold their exhibition in; and I trust the excellent and patriotic nobleman at the head of that society will exert his influence to pro-

cure for the graziers of England a proper market, where they can show their cattle without injury, and loss to themselves, or unnecessary cruelty to their stock. I have in some measure been induced to trouble you with this, in consequence of a statement I observed of the number of beasts sent to Smithfield, from the 1st of October to the 17th instant, in your paper of last week; and I have underneath compared the number sent in the corresponding period in 1826, from a parliamentary return that I happened to have by me.

Statement of the Number of Beasts sent to Smithfield, Monday's Markets, from Michaelmas 1826, to the 15th of December (12 weeks,) compared with the numbers sent to Smithfield during the corresponding period of 12 weeks in 1838, including the great Christmas markets for both periods:—

1826.		1838.	
Sept. 29	2519	Oct. 1	3795
Oct. 6	2602	Oct. 8	3580
Oct. 13	2521	Oct. 15	4140
Oct. 20	3131	Oct. 22	4395
Oct. 27	2993	Oct. 29	3508
Nov. 3	3185	Nov. 5	3810
Nov. 10	3387	Nov. 12	3899
Nov. 17	3227	Nov. 19	3822
Nov. 24	3046	Nov. 26	3662
Dec. 1	2612	Dec. 3	3591
Dec. 8	2825	Dec. 10	3664
Dec. 15	3093	Dec. 17	4624
Total		Total .. .	
Average of the 12		Average of the 12	
weeks		weeks	
2928.3		3874.2	

showing an increase in the supply in 12 years of upwards of 30 per cent. The supply has kept pace with the increase of population. How then, if we are to go on in the same ratio, can it be possible to find sufficient space for a cattle market, in the midst of a dense population of 1,600,000 people, inhabiting the first commercial city in the world? The proposition is too monstrous to be tolerated in these days of improvement.

Your insertion of the above in your useful paper will oblige a constant reader and subscriber,

AN OLD GRAZIER.

Dec. 26, 1838.

LORD WESTERN'S SHEEP.—The *Bury Post*, in noticing Lord Western's experiments in breeding sheep, says:—We see nothing impracticable in Lord Western's design; on the contrary, much to encourage and commend. Look at the marvels which have been wrought in the vegetable world during the last quarter of a century. The gardener "of the olden time" would be absolutely lost among the mazes of our new creations of dahlias, carnations, roses, pansies, and the like. And does not the analogy hold good with regard to the animal? Assuredly it does. We have within the last week enjoyed the privilege of a visit to Holkham, and can enter fully into the views of Lord Western, both as to the flock and pigs on that celebrated domain; each of which we had full opportunities of inspecting. Nothing can exceed the beauty of the ewes, which combine the great essentials of quantity and quality of fleece, with a heavier carcass than is exhibited by the old Sussex Downs. The pigs are a cross between the Neapolitan boar and our common Norfolk sows; these latter perhaps not so good as they might have been; though let them be what they may, the produce fetched at the late annual sale an average of 5*l.* 12*s.* 6*d.* each, no bad criterion, after all, of their merits.

TO THE EDITOR OF THE SUSSEX ADVERTISER.

SIR,—As your Paper of the 17th requests communications on dibbling, from counties in which it is practised, I send a letter from Mr. J. Gedney, near Harleston, in Norfolk, who has made land very productive on which his predecessor failed, whose example is followed by his neighbours, and who is land steward to various landed proprietors. He says broad-casting of wheat is almost unknown. The only question being between drilling and dibbling, neither of which uses more than two bushels of wheat per acre, instead of three bushels, as you say are used in broad casting in Sussex, and the price of dibbling varies from seven to ten shillings an acre according to the depth and distance of the holes. The most discerning cultivators in this part of Norfolk, are agreed to make the holes four inches apart in all directions, and to drop three or four grains in each hole, and never more, or it will prevent tillering; and never less than three inches deep; and I begin to imagine the great failure of wheat plants to be mainly owing to the shallow sowing of the seed, and from the improved tillage of late years here introduced, that it will be found desirable on deep soils, to plant much deeper than has hitherto been practised, otherwise from deep ploughing and frequent stirring of the land, will be so light the grain will be a prey to birds and insects; and the plants for want of root will be soon liable to injury from the frost, as I apprehend was the case on exposed land last year; but from the seed being deposited deep, the straw is less liable to be lodged by wind or rain. In many districts of Suffolk, on rich soils, it is usual to see an abundance of long straw, with a promise of five or six quarters of wheat, but it disappoints the farmer in the quantity and quality of the grain, and on examining the straw it is weak, and without stiff straw it is useless to anticipate well filled ears and plump kernels. Whereas had the seed been deposited deep enough to form plenty of root before it rose into stem, it might have collected sap enough to perfect the grain.

Mr. Gedney adds, I do not hesitate to acknowledge I have learnt much from examining allotments of land; for if there are twenty tenants, hardly two will till alike; therefore on the same ground in the same season, you see it farmed in different ways, and season has so much to do with crops, that we have frequently many years to wait to have proof of the result of any plan on a large farm. These allotments to labourers form so many experimental farms throughout England, and I trust the result will be, that tenants will feel that to flourish, they must cultivate well every inch of land, when they will find we have not a sufficiency of labourers, for it is a truism, that they who employ the least, gain the least.

Mr. Gedney last year dug 50 acres of land, and says, land I had dug two years ago is quite altered in appearance, and very productive, and he has twelve acres of carrots, and one he sent weighed upwards of three pounds without the leaves and lower parts of the root.

I have tried various plans for forking my land, and in eight or ten years turning up the clay, twelve inches deep, and ridging it up to receive the frost has been most beneficial. If clay land is ploughed or dug deep, flat, the crops are often injured for years, but if ridged up, the frost powders the clay, which then mixes with the previously tilled soil, and deepens and renovates it. This digging costs forty shillings an acre, which is only a quarter part more

than three times ploughing, allowing twelve shillings per acre for the first, ten for the second, and eight for the third ploughing.

As this answers in Norfolk, why not in Sussex, where we have heavy clay lands? light down land where heavy rollers being requisite, the dibblers and droppers feet would compact the ground round the seed, and in this work, and in digging, the very many able-bodied supported now unproductively in and out of the Union establishments, might find work profitable to their employers and their country, for it is a truism used in Norfolk—that those who employ least, gain least.

A CASE OF CHOKING IN THE HORSE.

BY MR. GEORGE HOLMES, THIRSK, YORKSHIRE.

(From the Veterinarian.)

On the 29th of September, I was sent for in great haste, to attend what was said to be a very urgent case at Ashbury house. I found my patient, a horse, in the most distressing state, breathing with the greatest difficulty, heaving violently at the flanks, and the countenance exhibiting an expression of the intensest agony. He was foaming at the mouth, the ears cold and lying useless on the head; in fact, it was evident, that unless instant relief was afforded him, he must die. On hastily inquiring what all this was about, I was told that a ball had been given to him a little while before, and which it was imagined, had stuck in his throat.

I immediately proceeded to examine him, but the ball was not to be detected in the cervical portion of the œsophagus. In my own mind, I was convinced that it was in the fauces, or pressing upon the larynx, but the violent heaving of the poor fellow, and the instant suffocation that threatened when he was moved in the slightest degree, precluded any attempt to pass the probang: I therefore determined on immediate tracheotomy. It was but the work of a few seconds to open the trachea, and to insert a bent tube, with which I am always provided. He experienced instant, although very far from perfect relief.

I allowed him a little time to recruit his strength, and then endeavoured to introduce a probang into the gullet. I experienced a great deal of difficulty in accomplishing this. The obstruction was where I suspected, viz., at the commencement of œsophagus. After repeated attempts, however, I did remove the ball.

I then bled him, and administered an aperient ball. Still the animal continued to breathe very laboriously, and I suspected that a part of the ball had passed into the trachea, and perhaps into the bronchi, and I feared that, after all, my patient would be lost. The pulse remained rapid and hard, and was fully 100; I therefore, before I left him, practised a second bleeding, and ordered two scruples of opium and the same quantity of digitalis to be given every three hours.

This medicine had an admirable effect in allaying the extreme irritation that had been for so long a time going on. In about fifteen hours after the operation, all unfavourable symptoms had vanished; the appetite and spirits returned, but the horse was kept under a restricted diet for awhile. The wound in the trachea quickly healed, and the animal now continues as well and as fresh as he ever was.

ON THE BREEDING OF STOCK.

TO THE EDITOR OF THE EXETER FLYING-POST.

SIR,—As you have so obligingly inserted a few of my remarks, I am emboldened again to trouble you with another.

We must all admit that climate, food, local habits, &c., combine to give a permanent and distinct form to certain breeds of live stock. This is a self evident fact, and exemplified by viewing the breeds of our different districts in England, Scotland, Ireland, and Wales, and which it may be almost said, in opposition to the works of art, or incidental circumstances, still remain characterized, so as to excite our admiration of the fact, when we consider in the first place, the amazing intercourse between different parts of the kingdom, through which all the varieties of the different breeds are introduced into almost every county, however remote; and secondly, comparatively speaking, how few breeders or keepers of cows (to whom I principally confine my remarks,) pay any attention to keep up the aboriginal breed of that district in which they reside. As farmers generally purchase at a market or fair, those which they consider most worth the money, or such as most suit their pockets, we should cease to wonder at the difference of symmetry so observable in the same dairy, occasioned doubtless by the introduction of the non-indigenous breed. My view is to caution the young and zealous breeder from the disappointment that certainly awaits him, not to say the amazing expense he will incur by endeavouring to obtain eclat, by producing a new and distinct breed of cattle, of totally different habits and points. It is obvious to every reflective mind, that the divine artist, in his unerring wisdom and infinite judgment, placed man and every other animal, in such particular spots as were best calculated to perfect and accomplish the great and original design, and selected such particular castes, (though varying in external appearance, yet agreeing in organic construction,) to occupy such particular portions of the globe, as were best qualified to fulfil his design, as well as those most congenial to the habits, constitution, and I may add, comforts of the residents, and also, so as to secure the increase and distinctive points of the aborigines. Let the beginner then commence by purchasing the most promising he can select from the best and most esteemed breeds in his own immediate vicinage, I mean the indigenous breed of the county, and keep up his stock from his most favourite cows. I confine my present remarks chiefly to dairy farms, being convinced that cows, uniting the conjoined properties of milking, and aptitude to fatten afterwards, pay the best, if continued on their native soil, or if I may use the expression, within the limits of their own district, as originally designed by nature. Symmetry in stock is certainly very attractive and desirable, where the expense is kept within due bounds, as it must be acknowledged that keep of young stock has a vast influence on the improvement of their points. Only compare a yearling heifer, that has been well kept, (though without corn,) and warm housed, with one that has been turned out all the winter, or even kept in an open straw yard, and fed with barley or oat straw, and though equally fine and clean in their respective points, when separated in the autumn, yet they will bear no kind of affinity or comparison either in size or beauty in the spring. Again pursue the

same plan the following winter, and you then fix the shape for life, the one as a handsome clean grown cow, the other as a coarse and plain one; this confirms me in the belief that as much additional beauty has been attained by the extra corn feeding, and superior keep of some of the prize stock, as by the wisdom in the crosses: for had these identical stock when they were calves, been sold to a small needy farmer, kept hard and wintered cold, they would have attracted very little or no attention, the happy medium is doubtless the grand desideratum—over feeding is certainly an error, and to a certainty, inevitably proves to be more cost than profit: on the other hand it is equally certain that no animal ever pays for starving, if an animal will not pay for proper keep, by far the most politic mode is to get rid of it at once.

Your s,

AGRICOLA.

Dec. 14, 1838.

ON THE BREEDING OF STOCK.

(Continued.)

SIR,—Very justly does Mr. Adam Ferguson remark when speaking of crosses, "We may well feel humble when we consider our ignorance upon this, as well as many other branches of rural economy, but it is undoubtedly learning *much* when we become satisfied that we know but *little*." That a number of men, many of them gentlemen of considerable talent as well as property, have paid very great attention to improve the breed of our English cattle, is a fact readily admitted: that such pursuit was very laudable and praiseworthy cannot be denied, and has been attended with beneficial effects, so far as ascertaining what particular crosses, or indigenous breeds, produce an animal possessing the most valuable requisites, either by its aptitude to fatten, combining product of milk, if a cow, and size with weight, if of either sex. And it is evident that many have wonderfully succeeded in obtaining the object in pursuit, but it is also unfortunately equally evident that after attaining to the climax of this perfection, not one out of ten has obtained the object which the trader ought always to have most in view—to benefit his purse. If we take a view of the finale of many of our noted breeders of improved stock, (I beg to be understood I allude to farmers and not to independent gentlemen) of whom report says they have sold a bull for two or three hundred guineas, a cow for eighty or a hundred, a yearling for forty or fifty, and so forth. Enormous prices, doubtless, and tempting lures to the inexperienced and the tyro, but mark the issue! The cattle may, and doubtless have been, very much improved in symmetry, and also many other desirable qualities, but the breeder has decreased in property in the same ratio, till his finances are exhausted, when he has to console himself on the benefit he has rendered to the community at large, the great acquaintance he once made, how many noble dukes and lords have dined at his table, complimented him on his famous breed of stock, his excellent dinners, and capital wines, without perhaps purchasing a single animal. Thus the smiles of the great have stimulated him to continue on, till he could no longer keep up the ball, and at last he sinks into obscurity; and from the pinnacle of eminence falls into the *otium cum pover-tate*, without ever again being enlivened by even the shake of the hand of those noble amateurs, who once enjoyed the hospitality of his roof and the liberality of his table. (Many instances have

fallen under my particular notice.) Although I by no means wish to disparage, but on the other hand highly to commend the perseverance of these experiments, provided it be undertaken by gentlemen of independent property; in them it is truly laudable. My aim is to caution the farmer of moderate resources from indulging in this hobby, which cannot fail in terminating in loss, besides a great variety of disappointments, only to be appreciated by experience. Let him always bear in mind that a reduced farmer has no proportionate chance with a tradesman of recruiting his circumstances; the latter if one trade fails can have recourse to another, the farmer has no such qualification, he has then but two prospects in view, the one to manual labour, the other a very precarious one to obtain the situation of a bailiff. Cobbett's simile is not a bad one, he says, "Farmers are like oranges, if once sucked dry, they never produce more juice."

I believe it is considered to be a generally admitted axiom, that the influence of the male far exceeds that of the female in communicating qualities to the offspring; too much care cannot be taken to select the best bull, nor should the choice of the female be in the least a matter of indifference, as it is only by due attention to both that perfection can be looked for, keeping in mind that the selection be made from the indigenous breed of the country. For from whatever cause this distinct breed in the different districts arises, it matters but little to our argument whether it be attributable to the will of the allwise disposer of events, that every district should vary from another in its qualifications and productions, and thereby render us more dependent on each other, or whether it be by the effects of soil, temperature, and other local propensities. This is an ascertained fact, too well established to be questioned, that so far does this influence extend, that it appears as though the limit was fixed, as in the instance of mule-breeds—"Thus far shalt thou go and no farther"—or, in other words, it is not for man to change the order of providence, since nature does nothing in vain, it will prevail, and the super-ruling power will ever maintain its pre-eminence.

Having premised thus much as to breeding, I leave it to the candid reader, either to assent or dissent from the opinion I have stated; if the latter, and he states his reasons, the same good end may be produced. It will occasion discussion by which the real truth may be elicited, and my object will then be attained.

Your's, AGRICOLA.

Dec. 31, 1838.

THE TITHE COMMUTATION ACT.

The following petition is now in course of signature by many influential land-owners and others in Kent, preparatory to its presentation to Parliament at the commencement of the ensuing session:—

To the Honourable the Commons of the United Kingdom of Great Britain and Ireland, in Parliament assembled.

The Petition of the undersigned Landowners and Farmers residing in the county of Kent,

Most respectfully sheweth,

That your petitioners fully concur in the principle of the Tithe Commutation Act; though they cannot avoid expressing their extreme disappointment that

a *Bonus* was not granted to them, as they were led to believe, from the observations that were made when the Bill was in progress through your honorable House, that such a boon would have been conferred on them, in consideration of their estates being for ever fixed with a rent-charge for the commutation of tithes; particularly as the clergy and tithe-owners would be relieved from all the difficulty, risk, inconvenience, and annoyance to which they had heretofore been subjected. And that consequently, instead of a precarious income, they would be in the enjoyment of a permanent one, and that calculated according to the highest rate of produce, which possibly under any circumstance, a great portion of the soil of England, now in cultivation, is capable of yielding, particularly in the county of Kent.

That your petitioners admit, that since the passing of the Act, very trifling opposition has been offered to its operation, and which can be easily accounted for:—because in those parishes where a commutation has been effected, a composition, both for the vicarial and rectorial tithes, has long been in existence; consequently, little or no difficulty has arisen for the attainment of an equitable adjustment. But, now that the time has arrived for the compulsory clauses to be acted on, your petitioners are convinced, that in many parishes where the tithes have been taken in kind, not only will there be very considerable delay, far beyond what the framers of the Act ever contemplated, but that much dissension and animosity will prevail, and that the Bill will consequently occasion very general discontent.

To obviate, however, in some degree, the objection to the operation of the compulsory clauses, your petitioners respectfully suggest the propriety of amending the Act, so that the commissioners may be dispossessed of that unlimited power which the present Bill gives them; and that a clause should be inserted therein to the effect, that in cases where the parties cannot come to a satisfactory agreement, the commissioners should be empowered to appoint a valuer, who should be authorized to act in conjunction with two others—one to be appointed by the tithe-owners, and the other by the tithe-payers—and that the decision to which they may come should be final, without reference to any other authority whatever. But in order to ensure the requisite adjustment within a prescribed period, your petitioners would humbly propose, should the contending parties not have appointed valuers—after due notice had been given by the commissioners—that then the valuer appointed by them should forthwith act on his own responsibility, and that his valuation should be binding, both on the tithe-owners and the tithe-payers. Should a clause to this effect be adopted, your petitioners are of opinion that it would render the Bill more satisfactory to those who have property in the parishes where the tithes have heretofore been taken in kind: for there is an impression that the persons in general who are appointed to act as assistant commissioners, are of themselves wholly incompetent to come to a fair and equitable decision; and likewise from a belief, that their prejudices incline them to favour the clergy and tithe-owners, at the expense of the landed proprietors. And it surely must appear to your honourable House an act of the greatest injustice, that property should be disposed of, according to the fiat of men, who want the requisite ability to discharge the important duty with which they are entrusted.

Your petitioners therefore beg your honourable House to take their petition into consideration; and should you be pleased to amend the Tithe Commutation Act, in conformity to their suggestion, they will, as in duty bound, ever pray.

LORD WESTERN'S MERINO SHEEP.

The following letter was addressed to his Lordship by Mr. H. Barwell, of Witham, who slaughtered his sheep:—

“My Lord,—Having been the purchaser of the three-year-old Pure Merino Wether Sheep bred and fed by your Lordship, on your estate at Kelvedon, which was exhibited at the last Christmas Cattle Show at Chelmsford, and for which your Lordship won a bet of 5*l.* with Mr. Hicks, of Walton, I take the liberty of laying before you, for your Lordship's information, and the information of agriculturists and graziers generally, the opinion of the judges relative thereto, also my own statement as to the weight of the carcass, fat, &c.

“I am aware that the bet was made in consequence of a challenge thrown out by your Lordship to show a Merino Wether at the Christmas Show, against any of any other breed, on the condition only, that size should not pass for merit. Mr. Hicks took it up, and produced a fine South Down Wether, supposed to weigh 20 stone, but the judges were of opinion that the Merino was a superior handling sheep, being exceedingly good in all points, remarkably thick on the loin and back, and square at the leg and wide at the brisket—that the constitution of the sheep must have been remarkably good to have carried a fleece of wool, weighing 32*lbs.*, twelve inches long in the staple, and of beautiful and fine quality. Indeed, your Lordship, whilst you have so wonderfully improved the carcass, is considered not to have deteriorated the wool: the carcass of this sheep, inside and out, was as good as I have ever had, and in point of colour the Merinos carry generally a brighter red and white than any other breed.

st. lbs.

Weight of carcass....14 0 (8*lbs.* to the stone.)

Ditto fat and caul 0 12

Ditto gut fat 0 8

and the kidneys remarkably large.

I have the honour to subscribe myself,

My Lord,

Your Lordship's most obedient
and very humble servant,

HENRY BARWELL.

Witham, January 9, 1839.

FOOD OF PLANTS.

The phosphoric acid was long considered to belong exclusively to the animal kingdom, but in the year 1772 it was found in the grain of many vegetables, particularly wheat; this led to a close enquiry into the subject, when, about the same time, Schule, the chemist, found it in animal bones, and since, it has been found in abundance in urine; still it is the surprise of many reflecting men, to know where nature gets the supply of phosphoric acid, to yield some portion to every grain of corn, as it is not much detected in agricultural soils. The straw which is returned to the land, wetted and rotted into a dung, contains none of this acid, except in proportion to the decomposed corn that may be amongst it; hence, many farmers have this year had an abundance of straw, but very much wanting in corn, and the remark has been made by many, that they know how to force straw, but they do not know so certainly how to fill out the straw with corn. One farmer remarked, he should only have this year 40 loads of wheat, where four years ago he had 140 loads, and yet his barns looked quite as well filled. To this it was remarked by one of the company, at the George Inn Market dinner, at Basingstoke, a few weeks back, that the farmers ought to return some (as much as they could get) of the decomposed corn; that is, the bread after passing through an animal, so

give to the land, the basis of the corn growing principle.

These remarks have been called forth in consequence of having lately analyzed the “carbonaceous mineral Powder,” which Messrs. Lance and Co. offer for disinfecting offensive effluvia, and with which, they say, their manures are prepared. This powder certainly does give evidence of very many matters necessary to the growth of corn and vegetables.

The phosphoric acid is yielded in great abundance, carbon and potash in quantity. These are the principal bases of vegetable growths, and if the farmers can get them on their land, they need not fear having their straw well filled. The encouragement now given by the newly formed Agricultural Society, and the premium lately awarded by that Society to a Rev. Gentleman, for the best method of analyzing soils, it is hoped will call the attention of agriculturists to the interesting subject of the food of plants.

Jan. 16, 1839.

AN ENQUIRER.

THE CORN LAWS.

The following resolutions were proposed by Mr. Brown, and passed at a meeting of the Barton Agricultural Association held last week. Lord Worsley, M.P., R. A. Christopher, Esq., M.P., and a great number of other influential gentlemen, were present.

That this meeting cannot but deplore the resolution of a portion of the merchants and manufacturers of Great Britain, to repeal the present Corn Laws, and reduce the British farmers and labourers to the level of the farmers and labourers on the continent, which will not only be injurious to the landlords, the farmers, and the poor, but also to the manufacturers.

That the inequality of the taxes, rents, wages, &c. between Great Britain and the continent, renders it impossible for the British agriculturist to sanction so unequal a competition, and which is the great aim and end of the repealers of the Corn Law.

That should they unfortunately succeed, the tenants with all their exertions, their capital, their industry, and their perseverance, will be eventually ruined, though the reduction of rents would of necessity follow, even to one-half the amount, and when it is considered that perhaps a third of the lands are mortgaged, the reduction in value will in many instances, place the mortgagees in possession of the estates, and leave the landlords paupers.

That a similar ruinous effect will be produced to the farmer who holds borrowed capital, because the contemplated prices will leave him so reduced as to be unable to pay his debts.

That a complete change will then be effected injurious alone in the first instance to the farmers, landlords, and the agricultural poor, but eventually to country shopkeepers and tradesmen, and even to the manufacturers themselves.

That the average price of corn for the last 21 years for this country, is only 56*s.* 4*d.* and for the last ten years only 52*s.* 6*d.* which the manufacturers say is not too high.

That the British agriculturist is necessarily liable to many and heavy losses, arising from bad weather, frosts, mildew, unfavourable seasons, rot and other diseases in cattle; and that he receives less interest for his capital on an average than the non-speculating and fair trading merchant and manufacturer; and that the landlord seldom or never makes more than £3 10*s.* per cent., whilst that of the manufacturer varies from £5 to £10, £20, or even £50 per cent.

That it is well known that the operative manufacturer often makes very high wages, particularly those with large families, to the extent of from twice to five times the amount of the wages of the agricultural labourer; and that by working only four days in a week, many of them taking care to be drunk on Monday, because they

can afford Tuesday to sober in idleness, whilst the agricultural labourer toils all the week at small wages, and complains not.

That the repeal of the present laws will so lower the price of corn as to throw out of cultivation all the poor soils of the kingdom, and will leave us dependent upon foreigners, who, having the power, will inevitably,—in case of scarcity in their own countries, or of war, or the prospect of war,—lay an embargo on corn, and produce frightful consequences to this kingdom.

That this meeting is firmly of opinion that the repeals should be opposed by every possible means; that the present Corn Laws ought to be equally as strongly supported; and that it is desirable that petitions to both Houses of Parliament should be immediately obtained from every town and parish in the county.

That the sincere thanks of this meeting are due to Lord Worsley and Mr. Christopher, for their attendance this day, their excellent advice, and their promised support to keep inviolable the present Corn Laws.

ON BREEDING & FEEDING STOCK.

TO THE EDITOR.

Holderness, Jan. 2.

SIR.—Having entertained an idea that premiums for highly fed beasts promoted the erroneous opinion that the largest animal was the best, and did not clearly lead to the discovery of that sort of animal which produced the least expensive and best supply of meat for the shambles, I have been induced to apply calculation as a test of the relative weights to be aimed at to produce the greatest and cheapest supply to the consumer, so that both the producer and the consumer may participate in the benefit to be derived from the adoption of correct principles of breeding and grazing. As I may in stating my opinions on this subject be taking up much of your space, I beg you will consider the importance of it as my apology for doing so. I would not be understood to disapprove of cattle shows, being an advocate for them, and for the highly feeding of animals occasionally to show the state of perfection to which it is possible to feed them; but I would modify the system so as to give scope to the emulation of breeders of more limited means, who will endeavour to exhibit animals though not so highly fed, yet showing the symmetry and quality desired, and which ripe for the butcher have been produced at the least cost per stone. It will perhaps be asked, how are judges to know the cost of production? There was a premium offered at the last Smithfield Show for beasts in class 5, restricting keep; but in my opinion, the limit to age is too old, viz., four years three months. If my theory be right, this limit should have been three years, with limit as to feeding, that no hand meat should be given in grass season, say 13th May to Michaelmas in each year. I hope that the not awarding of the premium in this class this year has really been just, but I feel a little jealous that the view of the gaudy specimens in the other classes may have jaundiced the eyes of the judges and public to the prejudice of this class. I was much struck last year by the notice of some show in a southern county where a premium was offered for sheep which were to be fed on green food only. It was mentioned that the show was splendid except only in the class of sheep, which greatly disappointed the visitors, some of whom came from afar to see wonderful sheep, but found them to be no better than common food ought to make them, and it was in consequence resolved the next year's prize for sheep should be unlimited as to feed. This I have no doubt is a fair criterion on which to form an idea of the effect produced by our present system of cattle shewing; it exhibits the effect wrought on the spectators by such gaudy creatures as are produced, and that there is a want of a mixture of premiums, the object of which would be to form the taste and ideas of spectators as to the best symmetry and indications of quality to be

aimed at. In the usual way of keeping a stock of beasts from which profit is to be made by a farmer, I have supposed a short-horn at two years two months to be 45 stone weight, and at 6s. 6d. per stone, will give about 2s. 8d. per week for its maintenance. A beast one year older, to give the same weekly sum, must weigh 67 stone; and one two years older 87 stone. Taking this estimate, it is evident that the two-year old beast will be the most profitable, its individual risk in value least and the quantity and quality of land, &c., for its maintenance of less value or cost; and I believe its weight is as attainable as the larger ones. *Early maturity* then is the quality we ought first to obtain. But is the present system of exhibition at Smithfield such as to promote the development or attainment of that property? I think not; it is tending to the promotion of the exhibition of *monstrously fat old animals*. I will add some calculations grounded on your reported weights of some of the cattle shown at Smithfield, showing the annual increased weight for their ages, which will, perhaps elicit some remarks either against, or in favour of, my remarks in this letter.

CLASS I.

Breed.	Age.		Dead Ann. Wght. increased.		
	Yrs.	Mo.	st.	lb.	st.
Prize 1. Hereford	.. 4	8	..	117	13 25.0
Prize 2. Do.	.. 4	10	..	no weight given	
Do.	.. 4	9	..	104	0 21.89
Shorthorn	.. 4	10	..	117	2 24.2
Sussex	.. 5	10	..	118	2 20.4

CLASS II.

Prize 1. Hereford	.. 5	1	..	100	0 21.4
Prize 2. Do.	.. 4	1	..	127	4 31.0
Shorthorn	.. 5	1	..	114	4 22.4
Do.	.. 5	1	..	117	7 23.0

CLASS III.

Hereford	.. 4	7	..	98	12 21.6
Do.	.. 3	9	..	86	6 23.0
Do.	.. 4	6	..	94	3 20.8

CLASS IV.

Durham	.. 3	4	..	no weight given	
Do.	.. 2	9	..	74	4 27.0

CLASS VI.

Durham	.. 4	10	..	89	2 18.4
Do.	.. 3	4	..	85	2 25.5

I have given the weights 14lbs. to the stone; and the annual weight is stone and decimal. If there is not some error in the age or weight of the Hereford in Class II., which got the second premium, he was a most extraordinary animal. The young beast, Class IV., gives a large annual weight; the others varying from 20 to 25 stone for each year, except one as low as 18. These figures, I think, tolerably agree with the supposed increase of weights that I adopted, which would be an increase of 22 to 25 stone in a year. I hope what I have advanced may lead to some beneficial result in discussion or practice, and I am, Sir, yours,

RICHARD IVESON.

LETTING FARMS.

Mr. Editor,—Seeing a communication from a farmer in Staffordshire, in the *Globe* newspaper of the 10th inst., respecting the taxes on land in that county, I beg the favour of your insertion of this letter, containing a statement of what farmers and landowners pay here. I left a farm six years ago; my rent was 425*l.* a year; rates of every description in the last year amounted to 108*l.*; tithes, rectorial and vicarial, 82*l.* (exclusive of rates); land-tax and insurance, about 15*l.*—altogether 205*l.*, or nearly 50 per cent. on the rental. The same farm now lets at 300*l.* a year. The rates are 65*l.*, tithes 70*l.* (the

rent-charge will be more), and insurance and land tax 15 $\frac{1}{2}$., or exactly 50 per cent. I believe, judging from my own knowledge of a great portion of this county, that the taxes vary from 30 to 60 per cent. on the rental. Can you inform your readers, of whom I am one, what proportion the taxes bear to the rental of land cultivated for the growth of corn, in France, Belgium, and Prussia?

A FARMER.

Hampshire, Jan. 16.

THE CORN LAWS.

TO THE EDITOR OF THE GLOBE.

SIR,—England has had the misfortune, after a succession of years of great abundance, to be visited with a deficient harvest—one of the most extensive sources of privation which a thickly peopled country like this can experience—and which naturally and fitly attracts the attention of reflecting men to ascertain how it can best be guarded against.

When individuals or classes are in pain, they generally, as experience shows, cry loudly for assistance; nor do they limit their applications to reasonable, or even possible remedies, much less do they confine them to remedies practicable in themselves, just to others, and consistent with their own situation and possessed rights.

These observations are fully borne out at the present time by the direction of public attention, more especially in the manufacturing districts, to the subject of the corn laws; which are denounced generally and without limit, as an evil, notwithstanding they have been elastic enough to admit all the corn which the world can or may furnish at the present time of need, at 1s. per quarter duty.

It is not the first time, as several instances prove, that deficiency of home growth, with ports freely open, is still accompanied by very high price. Does not this, however, show, in common with many other circumstances, the paramount value and importance of this source to the consumer; leaving out of view for a moment, the rights and interests of the class which produces the supply.

Those who have investigated the subject, know full well, that it is absurd to anticipate, at any time, more than a very small proportion of supply from foreign countries—therefore it is surely not wise for manufacturers in furtherance of their own views, to attempt anything, had they the power to effect it, which would be really injurious to the great source of production—British agriculture.

Individually, I deplore the present high price of bread corn, affecting as it does, millions of the most helpless of our countrymen, whose resources will probably not be increased; and yet it is not by any means an equivalent for the destruction of half of my autumn sown wheat by the unusual severity of the last winter, unaccompanied by snow.

I believe the growers of wheat this year—as a body, not individually, and excluding those who held the corn of previous years, (who in this capacity, are warehousemen, or speculators), would be more justified in complaining of their gross returns per acre this year than in 1835-36, when wheat was 5s. per bushel.

I considered the applications of the corn-growers to parliament at that period futile and uncalled for, and suggested before the committee, as the only practicable remedy, a government purchase of corn, to a small extent, which might have set an example for individuals to preserve a portion of the abundance, which was of superior quality, for time of need, and which has so certainly arrived.

Were it possible—and is it not just—to throw the whole weight of a deficient harvest on the producer of corn, whose fault it is not, it would not be wise, as his resources would be crippled for producing abundance and cheapness in succeeding years.

The consumers cannot do without the British producer if they desired so unreasonable a course; and some consideration to him is their own best interest.

Those who ask for total abolition of corn laws, are so completely inconsiderate and partial, that they surely cannot be qualified to judge better than those who would seek the abolition of the national debt; and for this short reason:—tithes, poor rates, and county rates are assessed mainly on the land, and are constituent parts of the price of corn. A full equivalent for all partial taxation in the race of industry, is only honest.

Great as the application of skill, capital and science, to the cultivation of the land has been during the last ten years, increasing as the principle of progression in this respect still appears to be, and wonderful that our nation, which apprehended famine for its then amount of people nearly forty years ago, should have recently depended for its immensely increased population, with only a fractional exception, for several successive years on our internal growth, yet every reflecting mind which looks forward, must perceive, and the present year too surely demonstrates it, that our dependence is upon our harvest being good, for the year's growth to meet the year's demand. In the absence of this, we must look elsewhere; and it is not only a fair but an imperative question—how, and where, and when it shall be best obtained.

The elements of judgment so needful to just conclusions are somewhat better provided than they have been; although still lamentably deficient, and “Porter's Progress of the Nation,” coming from the most authentic sources, is a volume most interesting and important on a question such as this.

The manufacturing interest, it is evident, has been and still is making immense advances, and in that increase has altered the proportion of families as respects those employed in agriculture; the former being now an established majority, and equally establishing the fact that skill must have been devoted to the cultivation of the soil in an extraordinary degree, for the supplies we have witnessed to have been raised by such a proportion.

I am ready to admit that the continued increase of the manufacturing class, and their numerical proportion—whether desirable or undesirable in itself, is another question—not only gives them increased claims, but increased power, to act as a fly wheel of enlarged dimensions upon the agricultural body; and that in proportion as their manufactured articles become unabsorbed by home demand, and dependent for a market on foreign sale, to that extent have the manufacturing interest an increased claim on our own legislature for an increased degree of freedom from obstructions in their concerns, not for the monopolising idea of keeping down the manufactories of other countries, but for a fair competition for themselves.

I am, sir, your obedient servant,

GEORGE WEBB HALL.

Gloucestershire, Dec. 26.

THE CORN LAWS.

(Continued.)

SIR,—I am obliged by the insertion of my last letter; as I consider it a privilege of no small value

to have access to the minds of hundreds of thousands on any question of national interest.

I am, notwithstanding, well aware of the tomahawk treatment to which individuals are exposed who avail themselves of this advantage; and while I desire to scrutinise rather than fear it for myself, I deplore it far more in its injurious results on any beneficial course of proceeding for the cause of our country and of truth.

I do not mean that your paper is pre-eminent in this way—it assuredly pervades all in a degree, and if the fable of sun and wind have application, it is not beneficial.

In the present temper of society it is, however, a no small misfortune to have formed, and publicly expressed, an opinion on any great national question—so that sincerity and further investigation call for an avowal of convictions different in any material degree: to do so in such circumstances is, however, noble, rather than blameworthy; and I can the better bear tribute to such a course as it does not affect myself. The man who cannot stand fair yet searching criticism, has no business before the public.

I will now analyse, if you will permit me, your commentary, and add in detail a few observations on this important question.

The denunciation of the corn laws you quote from my letter is manifestly restricted by the connection to the manufacturing class; it is not so with the agricultural, although many of that class do not think the principle of protection embraced by them the best for the country, which comprehends both classes. But while abundance, and very low prices, and manufacturing prosperity were in existence, and all the protection which law could give to the farmer, the corn laws were comparatively a dead letter, and there was no adequate motive for dabbling with them then. At that period I called the attention of the editors of the *Leeds Mercury* to these circumstances co-existing; and have carefully watched the mutual influence of these things as circumstances have changed.

Although an import of corn from abroad, when not wanted, may be a very small proportion of the whole supply, yet, if it be surplus, every reflecting mind knows that it is of extraordinary influence in its effects under such circumstances, while on the other hand the much larger proportion in our time of need is comparatively powerless to keep prices down. A spoonful only of liquid poured on a full cup must all run over, the sides being stronger than the elastic pressure at that point of an open vessel; but if we suppose the gallery of the House of Commons filled to full convenience with individuals anxious to listen to the advocacy of a favourite member proposing a repeal of any circumstance pressing upon manufacturing industry, and an uninvited importation of guests from the sedulous attention of the active attendants there to be forced in, a practical illustration would be presented to the Chamber of Commerce at Manchester, should they be the parties, of the effect of a supply not required upon the whole, although the proportion admitted should not be large.

The present high prices are required, could they be borne, because they arise from diminished quantity without diminished expence in growing it; they are the sudden result of a supply less bountiful than we have had for seven years past, arising from circumstances which Heaven alone can controul. If this be true the observations on high prices and their consequences are not logical. I do not advocate them; and have always urged pressure sufficient to

keep the attention, ability, and invention of the cultivators to their sharpest edge, and have told them so.

I value too much the peace, prosperity, and happiness of our countrymen, to desire to risk in any way the supply of food they can obtain *best upon the whole*: but under the shelter of protection, and with the advantage of greatly increased skill, the means of affording it from our own soil have been immensely increased.

All our manufacturers were nurtured, and many still retain as much protection from competition as I desire. The great wave of population is, however, annually altering the circumstances of the country. Next to growing corn at home cheap and abundant, the regular admission of it at a duty equivalent to the difference of circumstances is the best course; the revenue of which could be applied to facilitate the progress of industry most requiring it, whichever class it might be: but to give up this advantage ground under any circumstances would be surely most unwise, as under any ordinary import it should never be forgotten a duty on corn is not an addition to the price here, but a subtraction from the price abroad.

A principle simple and uniform, free from excitement and speculation, open to all, whether possessing moderate or immense capital—and accordant, as far as circumstances will permit, with the other commercial regulations of the nation, is the one I consider best. With skill increased, profits reduced generally, and the advantage of keeping expenses accordant with reduced prices—this may now be met with open ports at a duty of 15s. per quarter, to be reduced 1s. per quarter annually until it reaches 10s. per quarter duty.

The manufacturers have a claim upon their country, and the farmers particularly, from sustaining by their skill and ingenuity the price of wool, notwithstanding the immensely increased import of that commodity. I gratefully concede that claim: I wait not to have it wrested from me; but if they wish relief from restrictions they consider injurious, they will show more skill in approaching the question by views moderate as well as just, and adapted to the enduring interests of the nation at large. Extreme views on each side may be equally wrong.

I am, Sir, your obedient servant,

GEORGE WEBB HALL.

Gloucestershire, Jan. 2, 1839.

STATE OF FOREIGN CORN.

(FROM THE TIMES.)

The foreign exchanges have again manifested a strong tendency downwards this afternoon. There can be no doubt now that large supplies of corn will be procured from various parts of the continent, contrary to a notion which seems to have prevailed extensively that such supplies were not to be had, against which either bills or gold must be remitted. At present little consequence seems to be attached at the Bank to this state of things, and indeed, to judge by the tone of those who receive occasional hints from that quarter, to be regarded rather with exultation than otherwise. There must be, in their opinion, a positive advantage to the Bank in turning some part of this "unproductive capital" to profit. This has always been the case heretofore until the drain had reached a certain extent, and then the correction of the "screw," rather roughly applied, has informed the commercial world how matters stood. The demand for shipping to bring home cargoes of grain is beyond all former precedent—at least, for a very great number of years.

STOCK OF LUMBER IN THE PORT OF QUEBEC, 11th DECEMBER, 1838,
WITH A COMPARATIVE STATEMENT FOR THE LAST FIVE YEARS.

	Oak Timber.	Elm Timber.	Ash Timber.	Birch Timber.	White Pine Timber.	Red Pine Timber.	Standard Staves.	White Oak Pun. Staves.
	Feet.	Feet.	Feet.	Feet.	Feet.	Feet.	M. C. Qrs. S.	M. C. Qrs. S.
Carouge Cove ....	....	....	....	....	1,368	96,611	.....	.....
New London Cove	2,278	....	264	....	1,556	170,521	0 4 0 19	.....
Sillery Cove.....	10,114	3,312	1,289	1,502	199,027	468,770	117 3 3 27	110 5 2 18
St. Michael's Cove	191,929	3,514	2,567	2,046	193,754	221,748	962 3 2 20	346 0 2 17
Woodfield Harbour	19,373	339	65	6,119	49,916	103,188	46 8 3 29	82 7 2 5
Spencer Cove	7,230	1,932	2,000	45	27,935	196,509	26 3 2 19	.....
Wolfe's Cove	45,009	32,366	3,511	5,747	100,646	333,439	101 8 3 28	202 5 2 23
L'ance des Mers ..	529	....	....	....	107,569	228,641	24 8 0 20	42 6 2 20
Cape Cove	1,668	581	1,000	1,471	52,609	26,231	.....	.....
Diamond Harbour	5,000	....	....	....	23,500	20,000	6 6 0 0	20 0 0 0
Prés-de-Ville ....	....	....	....	....	....	....	.....	.....
Town Wharves ..	....	....	....	....	....	....	.....	.....
Dorchester Beach	1,169	1,589	1,239	3,219	18,326	276,730	.....	25 2 2 23
Hare Point	4,504	524	840	....	64,540	60,384	10 0 2 24	40 8 2 25
Beauport Cove....	108,037	12,739	....	....	272,008	146,128	188 0 1 14	155 1 2 10
Montmorency .....	....	....	....	....	....	....	.....	.....
Point Levi .....	....	....	....	....	....	....	.....	.....
St. Charles' Cove..	2,950	1,000	....	....	75,000	98,050	.....	.....
Patton's Cove	23,360	7,722	627	....	25,465	311,352	12 4 0 14	73 4 2 27
Hadlow Cove	12,500	20,000	1,443	3,675	64,050	81,000	.....	.....
Etchemin .....	....	....	....	....	....	....	.....	.....
New Liverpool....	33,950	731	86	14,463	39,325	148,767	6 2 3 22	63 4 2 16
Ditto.....	....	....	....	....	....	....	.....	.....
1838.....	469,570	86,349	14,928	38,287	1,316,594	2,988,064	1503 5 2 26	1162 8 2 4
1837.....	606,624	358,647	99,639	11,764	3,003,701	3,003,511	1614 1 0 10	989 9 3 17
1836.....	347,539	145,954	145,768	31,751	3,173,093	1,706,254	1685 1 0 7	317 4 0 29
1835.....	834,682	541,348	230,679	76,452	1,857,405	1,946,601	2570 8 1 4	709 8 0 7
1834.....	300,508	45,250	5,082	6,312	307,777	624,644	1119 6 3 10	885 0 2 15
1833.....	560,709	214,475	5,266	2,716	1,081,166	751,370	393 8 0 25	405 2 3 21

	Red Oak Pun. Staves.	W. O. Barrel Staves.	Pine Deals.	Spruce Deals.	1½ & 2 in. Plank.	Ash. Oars.	Hand- spikes.	Lath- wood.	Pine Masts.	Spars.
	M. C. Qrs. S.	M. C. Qrs. S.	Standard	Standard	Pieces.	Pieces.	Pieces.	Cords.	Pieces.	Pcs.
Carouge Cove ....	.....	.....	17,000	....	....	..	..	..	..	..
New London Cove	.....	.....	....	....	....	..	..	..	..	..
Sillery Cove.....	4 6 0 4	186 6 1 3	58,807	1,250	5,030	..	1,680	90	..	200
St. Michael's Cove	3 0 3 24	30 1 1 1	39,682	6,811	10,219	..	2,141	3½	..	14
Woodfield Harbour	6 3 3 4	248 3 0 16	27,240	..	1,888	..	514	..	..	38
Spencer Cove ....	....	....	62,059	1,486	1,816	..	..	6½	..	120
Wolfe's Cove	43 9 0 24	....	21,798	7,421	....	938	2,107	20	..	589
L'ance des Mers ..	0 4 0 12	37 2 0 12	20,521	....	279	2,500	7,500	100	..	..
Cape Cove .....	....	....	6,155	2,200	....	400	3,152	25	..	..
Diamond Harbour	....	170 0 0 0	80,000	....	....	2,500	12,000	..	..	..
Prés-de-Ville ....	....	....	19,634	5,987	....	..	..	..	..	..
Town Wharves ..	....	....	25,093	75,879	34,650	..	..	136	..	..
Dorchester Beach	3 9 1 29	43 6 0 0	....	....	....	..	..	..	..	..
Hare Point	7 4 2 0	....	3,622	....	4,500	..	..	..	..	..
Beauport Cove....	10 2 3 4	51 4 3 2	3,207	....	....	..	1,080	..	..	..
Montmorency .....	....	....	35,300	39,738	....	..	..	..	..	..
Point Levi .....	....	....	19,751	27,440	....	..	..	..	..	..
St. Charles' Cove..	....	....	25,146	....	..	157	..	..	11	..
Patton's Cove....	....	2 1 1 0	74,313	19,802	770	..	239	5	..	..
Hadlow Cove ....	....	152 5 0 0	29,690	8,535	....	..	..	..	..	..
Etchemin .....	....	....	9,000	66,900	....	..	..	..	..	..
New Liverpool ..	1 7 3 14	....	62,366	22,726	....	..	..	..	..	..
Ditto.....	....	....	50,000	....	....	..	..	..	..	..
1838.....	81 8 2 25	921 9 3 4	690,384	286,175	59,172	6,495	30,443	386	11	961
1837.....	198 6 0 9	1483 1 1 29	591,350	120,800	120,818	15,281	43,539	137½	69	163
1836.....	680 5 1 15	862 0 3 22	177,684	75,716	24,691	19,303	77,968	283½	152	181
1835.....	934 1 1 26	674 6 3 19	453,717	222,802	20,394	33,220	51,269	167	310	1606
1834.....	421 5 0 2	87 5 0 2	132,921	72,701	37,150	2,260	11,256	102	91	298
1833.....	146 9 3 14	294 0 3 11	386,951	74,793	16,191	2,430	8,304	676	368	723

THE SMITHFIELD SHOW.

Our attention has been called to an omission in neglecting to notice some sheep exhibited by Mr. Jonas Webb, at the Smithfield Show, and which were alluded to by Mr. Beasley in his speech after dinner, at the Freemason's Tavern. We have no hesitation in assuring Mr. Webb that as far as we are concerned, the omission was wholly unintentional, having inserted the account of the proceedings as taken by the reporter. We subjoin, from the *Essex Standard* some observations upon the subject, made at the recent meeting of the Cambridgeshire Agricultural Association.

Mr. WITMERS said before the toast was responded to he wished to make one or two observations relative to the exhibition of sheep at the recent Smithfield cattle Show. He was greatly surprised to find that such perfect and magnificent sheep as Mr. Jonas Webb there exhibited, should have been passed over without any commendation from the judges—he could only account for such an omission either to the blindness or party feelings of those individuals. In the course of the proceedings not less than twenty persons, all of them excellent judges, and some of them first rate tup breeders, expressed their surprise to himself that such splendid animals should have received neither a prize nor any commendation. He was afterwards present at the dinner, when one of the judges, in returning thanks, expressed his regret that a great omission had occurred respecting Mr. Webb's pen of Southdown Shearlings, which had been commended by the judges, but from some error it had been omitted, and in justice to that individual he felt bound publicly to state that the judges had and did commend that pen of sheep. After having heard this statement, to his great surprise, he found that particular portion only of the speech omitted in all the reports in the London papers.

Mr. JONAS WEBB in returning thanks, observed, that he was very sorry the commendation that had been awarded to his sheep had not been found out until two o'clock on the fourth day, when it was too late for the public to discover that his sheep were worthy of commendation. It was certainly a singular fact too, that the speech of the judge after dinner was reported word for word in the several London papers with the exception of that particular part where he apologized for the omission of the commendation. Mr. Webb, in conclusion, said notwithstanding what had occurred he should continue to exhibit at Smithfield so long as he found his exertions met with the approbation of the public.

ON THE USE OF THE SUBSOIL PLOUGH.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—As a great deal has of late been said about subsoil ploughing, I shall, with your permission, engross a space in a column of your valuable paper in stating my experience in the use of the subsoil plough. Upon a large farm in my occupation, which has been most thoroughly underdrained with tiles, the soil of which consists for the most part of a heavy loam, which prior to its coming into my occupation used to be ploughed with four, five, and six horses at length, but now with only two horses abreast. Last autumn twelvemonth I determined to try the use of the subsoil plough, which I did in November, upon a field intended for a crop of mangel wurzel, and I can bear testimony to its great apparent usefulness in effectually stirring the subsoil. Two horses ploughed the ground as usual, followed by the Rackheath Subsoil Plough in the same furrow drawn by four strong horses at length. The subsoil was stirred and well broken up to the depth of fourteen inches without being brought to the surface. I was very much pleased with the operation, and anticipated great improvement in the future crop; the field was

not ploughed again until the Spring, when it underwent a thorough cleaning and pulverization for the intended crop of mangel wurzel, which was drilled the beginning of May on ridges a yard distant. The field looked well and was admired by many, and if the gentleman who eulogised the use of the subsoil plough so warmly at the late meeting of the Agricultural Society of West Auckland could have seen the field a month afterwards, well might he have exclaimed, that the use of the subsoil plough would revolutionize the face of the whole earth, for such a crop of thistles appeared as no mortal man ever saw before, although the field had not been particularly subject to thistles before. The weather was extremely dry, and the mangel wurzel vegetated but slowly; the consequence was that the thistles glorying in their liberation from their dormant, primeval state, nearly choked the tender plant of the mangel wurzel, and I was precluded from hoeing, as all the seed of the wurzel had not vegetated; however, the time arrived when it became imperative to do it, and eventually the thistles were destroyed by the use of the horse and hand hoes, and I was fortunate enough to obtain a fine crop. I mention this circumstance as I consider that the use of the subsoil plough should in most cases precede a drilled green crop, when an opportunity offers itself of destroying thistles, which may spring up from the effect of the atmosphere reaching the subsoil: if the plough preceded a corn crop, I think it not improbable that before harvest one might witness thistles with stems as large as broomsticks, and heads in proportion. I beg to add that I consider the subsoil plough as deserving the attention of most agriculturists, and I by no means wish from what I have said to detract from the merits of the implement, but merely to put some upon their guard not to use it without due caution.

I am, Sir, your obedient servant,

H. W.

January 11, 1839.

AN ESTIMATE OF THE PRODUCE OF THE LATE HARVEST, AS TO QUANTITY AND QUALITY, IN GREAT BRITAIN AND IRELAND.

BY MESSRS. ANTON AND MITCHELL.

LONDON, JANUARY 7TH, 1839. — For some years past we have been in the habit of submitting to our friends, and the public, as soon after the conclusion of the harvest as circumstances would allow, the opinion which we had formed of its productiveness, and as far as we were enabled to judge, our views respecting the prospects of the corn trade for the seasons which respectively followed. Impressed with a deep sense of the responsibility attached to the task, which we had imposed upon ourselves, we used every exertion to procure correct information and hazarded no opinion in which we did not consider ourselves fully borne out by the facts. The favourable attention that has been paid to our reports of former years has been no less encouraging than satisfactory, that our care and labour in preparing them have been duly appreciated. The kindness of our friends in so liberally responding to our call for information has this year furnished us with a far greater number of well considered district reports, than we had been favoured with on any former occasion, and for those districts in which we had no immediate connexions, on whom we could depend, we have supplied the deficiency by a careful comparison of the accounts obtained from the best printed sources of intelligence.

We venture to anticipate from this accession to our means of arriving at accurate conclusions respecting the different grain and other auxiliary crops, that our report of this year will be found no less deserving of attention than its predecessors.

WHEAT.—The breadth sown with wheat in the autumn of 1837 was fully an average in all the Southern counties of England. In the Northern counties the increase of breadth was still greater. The unfavourable autumnal seasons of the two preceding years, in many

instances compelled the farmers to the substitution of spring corn for wheat, a course to which they were the more readily inclined from the low price of wheat, and the relatively higher prices of spring corn then prevailing. The necessary consequence of this overproduction was a decline in the prices of barley and oats, which reduced them both to their relative level compared with wheat, and in the case of barley so much so as to verge closely on the point where production ceases to be remunerating. Besides overstocking the markets, the preference given to spring crops, having in many cases caused their being repeated oftener than a judicious system of cropping would sanction, much land was rendered for a time unsuited to their renewal, so that the farmer was prompted not less by his direct pecuniary interest, than by the rules of good husbandry to avail himself of the upon the whole favourable wheat seed time of 1837, to sow an extra breadth of that grain.

The season of wheat sowing was upon the whole more favourable than it had been for several years before. The month of October was more uninterruptedly fine than any other month of the year, and November participated largely in the same character. Wheat sowing was in some measure impeded by the drought prevalent during the first three weeks of the former month, but the time was not lost to the farmer, as it enabled him to manure a greater breadth of land for the wheat crop. Towards the close of the month the drought was succeeded by moderate rains, which while they set at liberty the lighter and drier soils, were not so excessive as to impede the progress of the plough, on those of a heavier description. The process of seeding the ground with wheat went on favourably with only occasional interruptions from frosts and rains during the whole month of November, and the weather continuing open up to Christmas, the unusually prolonged seed time afforded even the most backward a full opportunity of bringing it to a satisfactory conclusion.

The promise of future productiveness, held out by the highly propitious season which continued up to the close of 1837, in the course of a few days after the commencement of the new year, suddenly gave way under a visitation of frost and snow, the former of an intensity unequalled in this climate.

The effects of this on vegetation might not have been so serious, but for the intervention of a thaw, of no long duration, but which effectually melted the snow, and left the young wheats without any protection during the continued and severe frosty weather which followed. On the final breaking up of the storm, it became manifest that the wheat crop had received damage to an extent that no subsequent favourable weather could compensate for, and as the spring advanced this became more and more apparent. No part of the wheat crop escaped serious injury, on light chalky and thin gravelly soils the damage was most extensive: the ancient wheat lands of the country the strong adhesive soils suffered less in degree. On the former description of soils, as well as on all high-lying and exposed situations the devastation occasioned by the frost on the wheat plants was very great. Large breadths were ploughed up in many of the counties of England in which wheat is the staple produce, as affording no reasonable prospect of yielding sufficient to repay the expenses of harvesting. Much also which did not ultimately repay that expense, was left from an expectation of improvement which miserably failed in being realised. The spring continued unfavourable to vegetation until past the middle of May, and the wheat seemed so make little progress, but in many cases rather to fall off, an effect attributed to the ravages of the wire-worm, as well as to the inclemency of the season. As the summer advanced, the grain crops in general began to wear an improved appearance. This improvement in the appearance of the crops, the natural result of their advancement to maturity, added to a tolerable shew of straw in the less injured portion of the wheat crop imposed upon the less experienced, and more superficial observers. To this may in part be at-

tributed the strong disposition to undervalue the injury sustained by the wheat crop in the spring, and to paint in glowing colours, the changed appearance of the fields (natural enough for the season) which began to shew itself among the writers of the loose and popular notices of the crops that obtained currency through the means of the public press, during harvest and immediately before and after it. The authors of the more elaborate and accurate agricultural reports, furnished to the *Mark Lane Express*, and other journals professedly devoted to agricultural subjects seemed many of them to favour similar views. The sensitive feelings of some of the agricultural portion of the community on the subject of the averages, and the admission of foreign corn, may also in some measure account for the bias, which was so evident in almost all the accounts in the public prints that were in circulation before the crop was brought to the test of the flail and thrashing machine.

The harvest became general round London and to the South and East about the 20th of August, on which day there was a fair shew of new wheat in Mark Lane from the adjoining counties. One sample from Kent had been shewn on the preceding Monday.

The weather from the 20th to 26th of August was very cold and boisterous, with an extremely low temperature for the time of the year, and a great deal of heavy rain fell during the same interval, harvest operations were in consequence not a little impeded. This unfavourable state of the weather was not confined to the districts round the metropolis, but was general throughout the three kingdoms. This was succeeded by a week of very fine weather, and harvest operations were carried on under favourable circumstances, and if we take into account the backwardness of the season, with but trifling interruption, till the greater part of the crop was secured in fair order and condition by the 20th September, in all the Southern and Midland counties of England.

There remain however to be excepted, a portion of the wheat crop on the higher and more exposed situations within the above limits, and which did not come to maturity till a more advanced period of the season, and some in the earlier districts, the condition of which was injured by being too hurriedly carted during the wet weather at the beginning of the harvest.

Another drawback to the productiveness of the wheat crop of 1838 to which we have not adverted, but which is of importance sufficient to demand especial notice, still remains to be observed. We allude to the injury done to the wheat by the attacks of an orange coloured maggot. The ravages of this insect in the Midland counties, especially those bordering on Wales, along the Western coast, and in the South Western parts of England have been very extensive. Several careful observers have estimated the deficiency in the yield occasioned by this insect at one-fourth of the part of the crop affected, amounting to two-thirds of the whole. Its attacks were mostly confined to one side of the ear, and to that part of the crop which but for this visitation, would have turned out the best; the later portion having in most instances escaped injury from this source.

Our having continued to receive repeated corrections of the estimated yield from many of our correspondents who at an earlier period of the season favoured us with their opinions, all of whom stating it to be less than what from first impressions they had been led to represent it, has been one of the causes of the delay in bringing forward this report, as we considered it better to defer giving our judgment, until we should have the whole subject before us, than to decide upon imperfect and partial information.

From a dispassionate consideration of all the information which we have obtained bearing on this the most important part of our inquiry, we conclude that the wheat crop, after making all allowances is from one-seventh to one-sixth deficient, taking into account both quantity and quality, in the great wheat producing counties of Essex and Kent, and in the counties immediately adjoining them. The deficiency in the other counties

embraced within the limits which we have assigned, cannot be estimated at less than one-fifth on an average of years.

In the counties North of the Humber, there was, as we have before stated, a larger proportional breadth sown with wheat; from this must be deducted what was ploughed up in the spring, which although it might not bring down the whole breadth of wheat grown in these counties to an average, was at least as great in proportion to the whole, as in the Southern counties of England.

The harvest did not generally commence even in the earlier districts of these counties until the first week in September, a difference in point of lateness, as compared with the South, not greater than usual. The harvest weather continued upon the whole propitious up to the end of October, when the crops of all kinds were nearly all secured in Yorkshire, and in all but the mountainous districts of the Northern counties. In these, part of the crops remained in the fields as late as the middle of November.

The yield of the wheat in the Northern counties is equally deficient in point of quantity, and more so in point of quality than in the Southern counties, and including both may be estimated at fully one-fourth deficiency on a more than average breadth sown, so that the deficiency upon the whole crop may not greatly exceed the average deficiency in the whole kingdom.

The accounts of the crops in Ireland that appeared in the Irish provincial papers before and during harvest were even of a more exaggerated description than those in the English papers relative to the crops in England, which we have made the subject of animadversion in a former part of this report. The more moderate stated the wheat crop to be nearly an average, while there were not wanting many who described it as considerably above an average produce.

Our increasing connexion with Ireland, and the consequently enlarged nature of our transactions with that country required us more than a year ago, to secure the exclusive services of a gentleman possessing great experience in the Irish corn trade, and having besides an intimate acquaintance with all the subjects bearing upon and connected therewith.

Our representative in Ireland made it his business, during the harvest months, to take a personal survey of the crops in all the Western and Southern parts of the island, and was at much pains to procure by correspondence accurate accounts from the remaining parts of the country, which he was not able to visit.

He reports the falling off in the quantity of the wheat crop at one-third of an average crop, and the deterioration in quality to be in the same or greater proportion, leaving upon the whole barely half the crop of an ordinary year.

In the South Eastern counties of Scotland, as well as in those bordering on the Forth there was an increased breadth of wheat sown in the autumn of 1837 and the spring of 1838, compared with what was under that crop the year before, in the latter counties fully more than on an average of years. In the West of Scotland the growth of that grain has been gradually diminishing for some years past, the soil and climate being found more suited to oats and barley, and the breadth of wheat sown last year was inconsiderable. In stating the comparative productiveness in these districts, we have to vary but little from what we stated to be the case in the North of England. The crop was in most cases inferior both as to quantity and quality. In the counties of Haddington and Fife, and the more fertile parts of the county of Perth the deficiency though considerable, is not so great as in the other counties comprehended in the above limits, and may be taken at from one-sixth to one-fifth below an average.

Very little wheat is grown in the remaining districts of Scotland, if we except the counties of Moray and Nairn on the one side, and part of the county of Ross on the other side of the Moray Firth. These though situated at no great distance from the northern extremity of the island, yield in ordinary years grain of all kinds of a quality not to be surpassed by the growth of any of the more southerly counties of Scotland. The wheat

crop this year in Moray and Nairn is very inferior in quality, and fully one-fourth deficient in quantity, while in Easter Ross the quantity is still more deficient, and the quality little better than the screenings of other years.

BARLEY.—The breadth sown with this description of grain if we except Norfolk and Suffolk, and the barley growing districts of Lincolnshire, where a full average breadth was sown, did not exceed a moderate average in all the other parts of England South of a line from the Humber to the Mersey. The ground had been rendered highly adapted for the reception of the seed; by the action of the severe frosts during the winter, and the whole was put into the ground in good time, and under the most favourable circumstances. There were but very few complaints of the appearance of the crop during its earlier stages, and as it advanced these were all forgotten in an almost universal consent that barley promised to be the most abundant crop that had been known for many years.

Although a considerable portion of the crop was laid, from the great bulk of the straw, it was only in very few instances that much damage accrued from that cause. This crop met with, upon the whole, a very favourable harvest time, and was generally secured in excellent order and condition.

The same causes that favoured the growth of straw in this crop, viz.: the prevalence of wet weather in June and July, and the absence of hot forcing suns, also led to an exuberance of the clover and other artificial grasses that grew amongst it.

For some time after harvest the impression that barley was a superabundant crop continued to prevail. When it began to be more extensively thrashed out, the yield from the straw was found to be very deficient, and when we take into account that the quantity of the artificial grasses amongst it, required that a long stubble should be left, to facilitate its being quickly ready for carting, the acreable deficiency must be more considerable. The universal defalcation in the yield, not confined to particular districts, but extending to every part of the kingdom where barley is grown, may with safety be calculated upon as being sufficient to bring down the whole crop to somewhat under an average in point of quantity. The quality upon the whole is superior to that of ordinary years, and though variable, there will be found a large proportion of fine malting and distilling qualities, the former in many instances unsurpassed by the best samples of the most favourable barley seasons of late years.

In the counties of England North of the Humber in addition to the defective yield common to the rest of the kingdom, there was a very short breadth sown, and a large portion of the crop was injured by being laid and otherwise damaged in the process of harvesting. On the reduced breadth sown in these counties the produce will not reach two-thirds of an average crop.

The barley in Ireland was to appearance rather a good crop, but the yield has been less than was expected, and the quality is in most cases inferior.

In the fertile counties of Berwick and Roxburgh, the barley crop presented a good bulk, and will amount to about an average crop. In the South Western counties of Scotland, a large portion of the crop was lodged early, and the grain is not only small, but is also deficient in colour and quality and below an average. In the counties bordering on the Forth, the barley crop was secured in fair order and condition. Neither the yield per acre nor the weight have turned out satisfactorily to the cultivators, and the deficiency may be estimated at one-third under an average produce. In most of the counties more to the Northward the barley crop was light, and very deficient. In Moray and Ross there was a fair crop, the quality pretty good, and in many cases fine.

OATS.—The anticipations respecting the oat crop in England were nearly equal to those entertained about the barley, and though they have not been disappointed to the same extent, the yield in many cases has not been so great as was at first expected. During the earlier part of the summer complaints of the devastations of the wire-worm on the young oat plants, were common in

some districts of England, and these too where oats are more extensively cultivated than in most of the other parts of England. The counties of Kent and Devon with some of the intermediate southern counties as well as some of the midland counties, the fenny parts of Cambridgeshire, Huntingdonshire, Norfolk and Lincolnshire, may be enumerated as the districts in which the destruction occasioned by that insect was most considerable.

The oats as well as the barley met with a favourable harvest season, and the crop was secured in very fair condition. The quality of the samples of new English oats that have appeared in this market is exceedingly variable, with some extra fine and very heavy qualities, there is a great majority of a very ordinary description, even in those from the first oat-growing parts of England.

With the limitations to quality which we have above stated the crop of oats may, with few exceptions, be described as a full average in point of quantity in all the counties south of the Humber. It must not, however, be forgotten, in estimating the effect of this, upon the London and other great consuming markets, that in very few of these counties, after deducting the ordinary farm consumption, does the aggregate surplus of the oats grown even in the most abundant seasons, more than suffice for the retail trade of the local market towns.

The oat crop in Wales is a fair average in point of quality with a deficient yield. A much larger proportion than usual will go into local consumption, owing to the great activity that prevails in the iron-working districts.

In Yorkshire and the other northern counties of England the early oats are decidedly the best and most prolific of the grain crops. The later portion of this crop was in the other extreme, much of which in the higher districts of Cumberland, Westmoreland, and Northumberland never arrived at maturity, and a large deduction must in consequence be made from the general productiveness of the oat crop in these counties. The breadth sown was also considerably under an average.

Except in very forward situations the oat crop in Scotland was not got into the ground until late in the season. The breadth of land under this crop was, as well as in the north of England under an average, but not to so very great an extent, on account of there being but few districts, and these but of small extent compared with the whole country, that are capable of growing wheat. The oat crop had made but little progress up to the end of June, and practical farmers then predicted that there must either be a short crop or a very late harvest, in which latter prediction they were fully borne out by the events. The rains in July and August caused the oats to grow most luxuriantly and even in the extreme north there was promise of great abundance. In some districts the oat crop was extensively damaged by frosts of considerable severity which took place during the last week in September, and the first week in October. The damage done by these earlier frosts was however rendered comparatively insignificant by the magnitude of the calamity inflicted upon this crop by the hurricane of the 11th of October, and the frost, snow, and sleet that immediately followed it. This storm which commenced in the west, and passed through the island in a straight line eastward embraced in its sweep all the counties of Scotland, and extended in a modified degree to the northern parts of England. It would be in vain to attempt to enumerate all the instances of damage that have been communicated to us from various parts of Scotland, so general was the devastation throughout the whole country. We shall select four counties comprising the largest oat-growing district in the kingdom, and which in ordinary years export more of that grain than all the other parts of Scotland taken together, viz.: the counties of Forfar, Kincardine, Aberdeen, and Banff. In the county of Forfar the loss from shake alone is estimated on a moderate computation at nearly eighty thousand quarters, amounting to about one-sixth of the whole crop, a serious deduction from a crop otherwise under an average. In the adjoining county of Kincardine the loss from the

storm was equal if not greater. It is calculated that the loss on the unsecured portion of the crop, remaining in the fields cut and uncut, was nearly one-third, and that more than half the grain in the county was injured by the storm in a greater or less degree. In the county of Aberdeen the destructive effects of the hurricane although not so great as in the two former counties, were abundantly distressing and calamitous, the uncut grain was severely shaken, corn stacks were levelled to the ground, and their contents blown to considerable distances, in some instances to the extent of half a mile. Every stook was laid flat, and the sheaves borne away in all directions. On the coast, much of the harvest produce was blown into the sea. The hurricane was succeeded by a snow storm, which lasted three days, the snow lying in most places to the depth of several inches, and breaking down by its weight the uncut grain. The same description will apply to the county of Banff. The upper parts of both counties were visited by a second storm on the 20th of the same month, very little inferior in violence to that of the 11th. The loss sustained by frost by the upland farmers previous to this second storm was immense, which by shaking their uncut grain completed the calamity. Even in the lower parts of Aberdeenshire and the neighbouring counties a great part of the oats will be unfit for seed, and in the upper none will be suited for that purpose.

In the south-east counties of Scotland the oat crop may reach an average, the superiority of the earlier compensating for the deficiency of the later portion of the crop. In the counties bordering on the Forth, the produce of the early lands though of excellent quality and secured in good condition has not come up to what was expected in the yield. On the highlands they suffered much both from frost and the hurricane on the 11th of October, though not to so great an extent as in the more northern counties. The deficiency taking in both the higher and lower grounds cannot be estimated at less than one-sixth of an average crop. We have already in describing the effects of the hurricane said sufficient with respect to the great oat-growing districts in the north-eastern parts of Scotland.

In the west of Scotland with the exception of some fertile and early soils, where there was a fair average crop of good quality, the oat crop is upon the whole much below an average. In the higher parts of the same districts particularly the upper ward of Lanarkshire, the deterioration of the crop from frost comes little short of a total loss. On the sheltered shores of the Moray Firth there was a fair average in point of bulk on early soils, which was secured in good condition. The remaining portion of the crop was inferior. The quality of the whole is very uneven, with but a small proportion of extra fine corn.

In the two most northern counties of Scotland, viz.: Sutherland and Caithness, and in the highlands and islands generally there was not half a crop, and it is to be feared that the destitution among the poor inhabitants of these districts, before they are relieved by the produce of another harvest must be very great.

Except in the northern parts of the island the usual breadth of oats was sown in Ireland. If we take into account the rapid course of improvement now in progress in the agriculture of that country, we shall not perhaps exceed the truth in stating that as great an extent of oats was grown last season, as in any previous one.

To the south of a line drawn from Galway to Newry the oat crop was well harvested and secured in good condition. The promise from the straw was at least a fair, if not a full average, and so general was the impression on both sides of St. George's Channel, that the Irish oat crop was an abundant one, that the London trade were very sparing purchasers at the low (compared with the prices subsequently realized,) opening rates, at which oats were offered at all the oat-shipping ports of Ireland. The suspicions entertained respecting the yield, having been confirmed by more extended thrashings, a very considerable deduction must be made from the estimate at first formed of the productiveness of the oat crop, in this more favoured section of the island. To counterbalance in some measure this de-

ciency in the yield, it must be admitted that the portion of the crop in question from its having been in general well harvested, will not shrink so much in preparing for shipment as was the case last year, and certainly much less than it did two years ago.

From the unsettled state of the weather a large portion of the crop in the north of Ireland came to maturity in bad condition, much of it being light, greatly discoloured, and of a very inferior quality. The yield is also very deficient. Although it may have escaped some of the calamities which befel the same crop in the northern districts of Scotland, the deficiency both in quantity and quality, will be nearly, if not quite as great in most of the corresponding districts of Ireland.

BEANS, PEAS, AND VETCHES.—Beans in common with all other descriptions of grain except wheat, covered less land than usual last season. They experienced a favourable seed time; and their appearance during the spring and summer months, exhibited in general promising signs of an abundant crop. They grew well to straw, and there were but few complaints of injury during the blossoming period from insects or otherwise. Although they did not in all instances pod so well as was expected from the bulk of the straw, they have in most of the early counties turned out a fair average produce, and being well harvested they are generally of good quality. In some of the midland counties, although an average or nearly so in point of quantity, the quality is very uneven. Along the eastern coast, particularly in the heavier soils of Lincolnshire and Norfolk, beans are universally a good crop, and will yield a full average produce. Being the latest in arriving at maturity, they have been a most defective crop in the north of England, and in Scotland all but a total failure.

The breadth sown with peas was also less than usual, and the frosts in the spring nipped the plants in many exposed situations. They were in general thin on the ground, and even where considerable length of straw was attained the pods in many cases were but partially filled, but as well as beans they were much better harvested than last year in all the early counties. The quality, particularly of the maple pea is fine and the condition good. White and blue peas are also of better quality than last year, and although considerably worm-eaten certainly not so much so as they were the year before. In Scotland peas are cultivated to no great extent, and in some districts where a few are grown, although for a short time they shewed an appearance of a moderate crop, the heavy rains and severe frosts caused them to be in a great majority of instances very little short of a complete failure.

In Ireland, generally speaking, beans and peas are merely known as garden vegetables.

A very great proportion of autumn-sown vetches perished in the winter. The scarcity of other early green food caused much of what survived to be eaten off. The very small remainder left to ripen, as well as those sown in the spring have not turned out well. The crop of vetches is in most instances very indifferent, and in many a complete failure.

HAY, SEEDS, TURNIPS, AND POTATOES.—The cold dry weather that prevailed during the spring had the effect of retarding the growth of both the natural and artificial grasses. The roots of some of the more delicate varieties of the latter were also extensively destroyed by the frosts in the winter. Grass lands intended for hay were besides, in many instances, stocked up to a period considerably later than usual, the consequence was that both meadow and pasture lands exhibited in the spring an unusually backward and stunted appearance. Copious rains indeed, followed, but they were in many cases too late to be of much service to the first crop of hay. In the counties round London, the earlier part of the hay crop was much injured by unsuitable weather at the commencement of the hay harvest. From the check in the spring and close feeding, the grass layers gave but little bulk of hay. Clovers and cinquefoil with some exceptions were a light crop, and were besides considerably damaged by the early rains. In the southern counties the hay crops were also much injured by wet, and the crop although not generally

heavy was about an average. In the midland counties hay was a more plentiful crop, and upon the whole secured in fair order. In the north of England and in Scotland the hay harvest was very protracted, and the crop about an average in bulk, was in a great many instances much injured by the weather.

Of red cloverseed a small quantity only was secured in good condition, and that not likely to turn out productive. All that had been previously eaten off or mown was more or less injured by the wet. There will be very little extra fine red cloverseed except a small portion of maiden seed, that was early harvested. Of white clover there was rather a larger breadth than usual left for seed, which was harvested in tolerable condition. The quality is not fine, much of it being very ordinary. Trefoil was under an average, and of inferior quality.

The turnip crop in England, though not so abundant as that of the preceding year was upon the whole a fair ordinary produce. The attacks of the fly were common in the south, and many of the Swedes were destroyed, when it was too late to resow that crop. Common turnips were in many instances in the same predicament after the destruction of repeated sowings. The black caterpillar made its appearance, but its ravages were not very extensive. In the midland counties complaints were general of the injury done to the turnips by a brown grub, as well as by the wire-worm. In the northern counties turnips are a deficient crop. The same remark applies to Scotland, and but for the extraordinary care bestowed on their cultivation, the deficiency would have been much more considerable.

The potato crop in England is deficient in quantity, not so much from any extensive failures from dry rot in the spring, as from the plants having, contrary to what was expected from the appearance of the tops, proved very unproductive on being raised. The tubers are universally small, and though in some cases the deficiency from that cause may have been compensated for by their being pretty numerous, yet this is far from being generally the case. The deficiency in the yield is common to all the counties of England, in none of which are potatoes an average crop. In some the deficiency is very great, and the crop calculated at little more than half the usual quantity. The quality is not complained of in the southern counties, where they were secured in almost all cases in good condition. In the north of England, the quantity is not only deficient in a greater degree than in the south, but the quality also is inferior. In Scotland the instances of total failure were far from being uncommon. Extensive tracts in some of the principal potato exporting districts had to be ploughed up, and the produce of the remainder turned out very deficient. In the highland districts, the frosts which destroyed the grain crop, were equally fatal to the potatoes, which will render the condition of the poor inhabitants doubly distressing.

Our representative in Ireland bestowed great pains and labour in ascertaining the state of the potato crop in that country. By personally witnessing the digging of one or more fields in various districts, and from the unbiassed reports of the Scotch land stewards of noblemen and gentlemen, which he received from various parts of the island, he states the potato crop to be under half of an average produce. The weather, too, during the season of digging the potato crop in Ireland was exceedingly wet and stormy, so that fears may be justly entertained that a large portion of the potatoes, from being pitted in bad order, will become sour and decay before the winter is concluded. It may also be calculated upon that the Irish farmer will be induced by the high price of pork to an early and improvident use of potatoes, in feeding pigs, which in Ireland are fattened chiefly if not altogether on potatoes; the consequence of which will most likely be a great diminution of the reserved stocks, and a scarcity of that esculent for human food in the spring and summer.

In order rightly to understand the position of the corn trade at the conclusion of last harvest, and thence to form any rational conjectures as to the range of prices likely to prevail, until some degree of certainty has been attained relative to the next harvest, it will

be necessary to bear in mind that last crop was the third in a succession of defective crops. The crop of 1836 though in itself deficient, had been preceded by several years of great abundance. This circumstance, combined with the check to speculation caused by the monetary difficulties of the time with the exception of a sudden fluctuation in November and December 1836, kept prices within moderate limits. The crop of 1837 was perhaps equally defective as that of 1836, but the fine harvest weather in the north tended to soothe the alarm, and many of the trade having suffered by the rapid advance and equally rapid decline of the previous season were much more cautious, and we experienced a quiet and steady demand for every description of grain, until the stocks of old grain, particularly of wheat were nearly exhausted on the approach of last harvest. The weather in July having been very unsettled, and the prospect of a late and deficient harvest becoming more and more apparent, a great progressive advance in price took place. Although no other description of grain participated in the advance to the same extent as wheat, yet it was evident that there was no superabundance of any article to meet the new crop.

The wheat crops in Prussia, and in the north of Germany generally were abundant in quantity, and the quality although inferior to that of some former years was upon the whole good. In Poland the wheat crop was considerably below an average. In France and Belgium, the crop although secured in good condition, was in general light, and in many districts below an average.

Making due allowance for the supplies that may be derived from the northern ports in the spring, and for what may in the mean time, notwithstanding the prohibition of the export of grain from the kingdom of the two Sicilies, be obtained from the Mediterranean, we look forward to a continuance of high prices during the summer, and when we consider that one harvest, however abundant, would be insufficient to put us in the same position as we were three years ago with respect to surplus stock of grain, no great fall need be anticipated for another year at the least. It is not, however, to be inferred from this, that we shall not at times have large supplies, and that prices will not in consequence give way, but these fluctuations will be but temporary, and prices will maintain a higher range than for several years past.

The barley crop of 1837 having nearly all suffered more or less from wet weather, was light, in some instances sprouted, and not at all a tempting article to induce either maltsters or brewers to keep a stock of it, yet before the season closed many maltsters were disappointed in not having got enough. Even grinding and distilling barleys were procured with difficulty. Such being the case there was no old barley and very little malt to meet the new crop. We have reason also to believe that the stock of spirits held by distillers was very small. The opening price of barley being low compared with the high price of wheat, country millers became formidable competitors with the maltsters for the finer descriptions of barley to be worked up, along with wheat, into flour. Under these circumstances, it is not to be wondered at, that when the deficiency of the yield of the barley crop came to be unquestionably established, that the price of that article rose rapidly.

We do not anticipate any permanent decline from existing rates, nor do we contemplate any very considerable rise, but believe that fine malting barley will maintain its position between 40s. and 50s. throughout the season.

The oat crop in Scotland having turned out very deficient, and the oats grown in England, with the exception of one or two counties, barely sufficient to supply the retail trade of all the market towns, the London market has to look to Ireland alone for the great of its supplies of that grain. Instead of large supplies of English or Scotch oats meeting the Irish arrivals and bringing down prices, we shall have more of the Liverpool, Glasgow, Bristol, Gloucester, Preston, and Greenock merchants competing with us in the Irish

markets. The deficiency of the oat crop in Ireland, with an extensive substitution of oatmeal for wheaten flour, particularly in the north of England, Scotland, and in Ireland itself, must necessarily enhance the price of that grain, and cause it to partake in the general advance.

We shall not be far from correct in stating that the usual quantity of old beans was on hand at the commencement of the harvest. The crop being under an average, and as they will in certain districts be ground down with wheat, and in other ways used for human food, they are likely to obtain very high prices throughout the season, unless a considerable importation of foreign take place, which, as well as what is now in bond, is likely to be cleared at a low duty.

During the last few years there has been a considerable demand for peas for shipment to the south of Scotland, and that demand generally sprang up, for grey and maple, in spring and summer, but this season the orders have come more speedily to hand, and as the supplies have been small, prices have advanced considerably. Peas will be used to a great extent as a substitute for wheat, and they will no doubt obtain higher prices throughout than they have done for several years past.

In concluding our observations on the various grain crops we beg to apologise to our friends for the lateness of this report, and to assure them that we have exerted ourselves to the utmost to render it worthy of their attention.

ANTON AND MITCHELL,
56, Corn Exchange. Corn-Factors.

LIVERPOOL, JANUARY 1.

Since this day month our imports of free Wheat, as will be seen from the following statement, have been upon a very large scale, the total amount exceeding 61,000 qrs.—above triple the quantity reported for December last year; the excess, however, is not to be found in any increase from our usual source of supply—Ireland, three-fourths of the arrivals of this Grain being coastwise and consisting chiefly of foreign brought round from London. The receipts of Oats and Oatmeal have been abundant and exclusively Irish produce. We have also had a liberal importation from abroad, the quantities thus derived amounting to 15,218 qrs. of Wheat, 7,824 brls. of Flour, 1,875 qrs. of Barley, 320 qrs. of Oats, 636 qrs. of Beans, and 488 qrs. of Peas; the South of Europe has supplied us with a great proportion of the Wheat and some part of the Flour, but the bulk of the latter consists of shipments from the Lower Baltic ports. The exports have still been trivial, the whole not exceeding 1,230 qrs. of Oats, and 450 brls. of Flour.

From the 1st to the 31st ult., both inclusive, there were imported:—WHEAT, British, 61,162 qrs.; Foreign, 15,218 qrs. OATS, British, 58,047 qrs.; foreign, 320 qrs. BARLEY, British, 16,103 qrs.; foreign, 1,875 qrs. RYE, British, 244 qrs. BEANS, British, 4,303 qrs.; foreign, 636 qrs. PEAS, British, 557 qrs.; foreign, 488 qrs. MALT, British, 2,959 qrs. MEAL, British, 59,851 loads. FLOUR, British, 24,376 sacks; Colonial, 1,907 brls.; Foreign, 7,824 brls.

And exported:—OATS, Foreign, 1222 qrs. FLOUR, foreign, 450 brls.

At the date of our last monthly report we estimated the granary stocks of free Wheat at about 90,000 qrs., but, with so liberal an importation as we have since received and the release of 48,000 qrs. of foreign from the Queen's locks, we have now, as might have been expected, to note a considerable augmentation. There is also a little increase of Flour, 25,000 brls. having been taken out of bond.

The present stocks in the port—free and in bond—are as follows:—

Free stocks—Wheat, 150,000 qrs.; Oats, 8,000 qrs.; Barley, 3,000 qrs.; Beans, 2,000 qrs.; Peas, 1,500

qrs.; Flour, 15,000 sks., 20,000 brls.; Oatmeal, 25,000 loads.

Bonded stocks—Wheat, — qrs.; Oats, 10,939 qrs.; Barley, 1,875 qrs.; Beans, 2,233 qrs.; Peas, 1,600 qrs.

In accordance with our usual formula, we subjoin a tabular list of the aggregate imports of free Grain, &c. into Liverpool for the four months immediately succeeding the harvests of 1836, 1837, and 1838, and of the highest prices borne by Irish produce at the close of each of these periods. The latter it will be seen *now* range from 35 to 54 per cent. above the quotations on the 30th December last year, and, as regards Wheat and Flour 18 to 22 per cent. above the current rates on the 31st December, 1836, at the same time that the supplies of the raw material have, thus far in the season, considerably exceeded [Wheat two to three-fold] those of either of the two preceding.

	WHEAT.		OATS.	
	Imports.	Prices.	Imports.	Prices.
	Qrs.	per 70lbs.	Qrs.	per 45lbs.
Sept., Oct., Nov., and Dec., 1836	43,783	9s. 1d.	79,325	3s. 11d.
Sept., Oct., Nov., and Dec., 1837	75,440	7s. 10d.	90,600	2s. 10d.
Sept., Oct., Nov., and Dec., 1838	151,415	10s. 9d.	130,437	4s. 3d.
	BARLEY.		BEANS.	
	Imports.	Prices.	Imports.	Prices.
	Qrs.	per 60lbs.	Qrs.	pr 480lbs.
Sept., Oct., Nov., and Dec., 1836	23,124	5s. 2d.	5,408	48s.
Sept., Oct., Nov., and Dec., 1837	15,893	4s. 3d.	9,288	38s.
Sept., Oct., Nov., and Dec., 1838	29,053	6s. 0d.	9,235	46s.
	FLOUR.		OATMEAL.	
	Imports.	Prices.	Imports.	Prices.
	Sacks.	per 240lbs.	Loads.	per 280lbs.
Sept., Oct., Nov., and Dec., 1836	89,200	54s.	59,676	35s. 0d.
Sept., Oct., Nov., and Dec., 1837	118,426	48s.	95,461	24s. 0d.
Sept., Oct., Nov., and Dec., 1838	63,913	66s.	106,986	37s. 0d.

Since harvest the circuit of our vend for Wheat has been constantly enlarging, and latterly we have experienced a more extended demand for this Grain than for a long series of years. Besides an extensive business with the millers of the town and immediate neighbourhood we have had considerable transactions with those of all the surrounding district, which appears to be more than usually dependent on this market for supply; large purchases have also been made for Yorkshire, Cheshire, Staffordshire, and even for Warwickshire, and to these must be added numerous sales to the northern counties, as well as many shipments for Scotland and for Ireland. The month's vend includes some quantity of Danzig with several cargoes of Odessa hard and soft, but the run has been chiefly on good and fair parcels of Baltic red; Irish new Wheat, though for the most part of inferior quality, has also sold pretty freely, and notwithstanding that the large purchases made some weeks ago in London for this market—now nearly all arrived, together with the recent liberation of the foreign out of bond have afforded us not only a liberal supply but a good choice of quality, prices generally have made a gradual though slow advance. At this moment the best English white Wheat is held at 13s. to 13s. 3d., red at 12s. to 12s. 6d.; Danzig white at 12s. 3d. to 12s. 9d., mixed at 11s. 6d. to 12s.; Baltic red at 11s. 4d. to 12s.; French at 11s. 6d. to 12s. 3d.; Tuscan at 11s. 3d. to 11s. 9d.; Odessa soft at 10s. 3d. to 10s. 9d. and hard at 9s. 6d. to 10s. 3d.; Irish varies from 9s. 6d. to 10s. for ordinary up to 10s. 9d. per 70 lbs. for the best runs. English-made Flour has met a ready sale; barrel Flour, especially prime sweet, has also found a fair demand, but Irish manufacture has gone off with some difficulty. The first named may be quoted at 66s. to 70s., the last at

60s. to 66s. per 280 lbs. The choicest brands of foreign—say from Danzig and Trieste—have brought 46s. to 48s., and fair marks of Hamburg and Copenhagen, &c. 44s. to 46s. per brl. United States sour is worth 39s. to 40s., sweet 45s. to 48s. per 196 lbs.

Large as the supply of Oats has been, the demand has sufficed to take off the whole; indeed the high value of Wheat and Flour has, now evidently, had the effect of considerably increasing the consumption of Oats and Oatmeal, and the market is at this moment more than usually bare of both articles. Latterly they have borne advanced prices; good mealings qualities of the former, which at the beginning of last month would not bring more than 3s. 10d., are at present worth 4s. 2d., and the choicest Wicklow are held at 4s. 3d. per 45 lbs. The best Oatmeal cannot be bought under 27s. which is 1s. to 1s. 6d. per 240 lbs. above the quotations on the 1st ultimo.

Besides two or three thousand quarters of Barley received by inland navigation, we have had an import of above 16,100 qrs., nearly nine-tenths of which consists of shipments from the English coast. In the face, however, of so large an influx, almost entirely of malting quality, prices have been pretty well sustained; the produce of the midland counties—which may be described as fair to good—has for the most part sold at 5s. 10d. to 6s. per 60 lbs.; good samples of Norfolk and Suffolk have reached 43s. to 45s., and Chevalier has commanded 46s. to 47s. per imp. qr. Irish has sold for grinding at 5s. 6d. to 5s. 9d. per 60 lbs. The distillers have been rather extensive buyers, and the general supply is now well cleared off. Malt has been eagerly sought after, as well by our brewers as for shipment. Fine samples are scarce and would command 68s. to 70s. per imp qr.

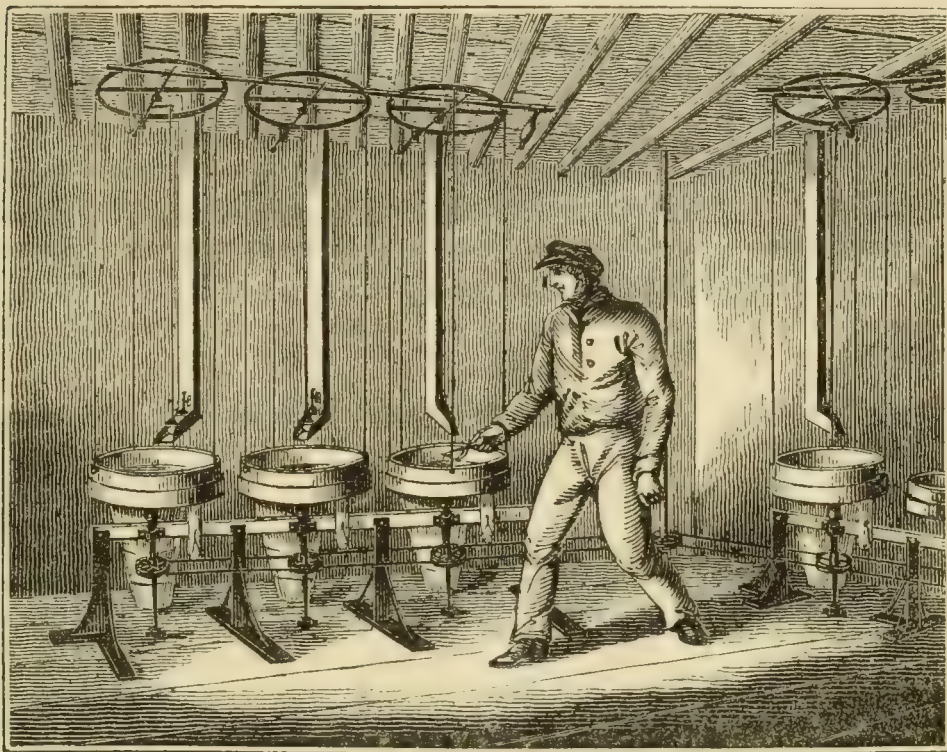
Beans have met a good retail sale at an advance of 2s. to 3s. per pr., the best English old are worth 50s. to 54s. new 47s. to 52s. per imperial qr. Foreign have sold at 48s. to 52s. per qr., and Irish new at 44s. to 46s. per 480 lbs. The release of 1,100 qrs. of foreign white Peas out of bond has barely kept the market supplied with this pulse, and its value has been moving upwards; the best English boilers would bring 56s. to 58s., foreign 52s. to 56s. per qr. Maple were on Friday sold at 47s. per qr. The market is bare of Indian corn; a little—duty paid—has sold at 50s. per qr.

The only transactions to report in lock Corn (of which our stocks are now very light) are, the sale of four or five thousand qrs., of Oats at 3s. to 3s. 8d. per 45 lbs., and one or two lots of Beans at 38s. per qr.

We observe from the circulars of many of our respected contemporaries as well as from the public prints that the prevalent opinion fixes the deficiency of the late crop of wheat at one-sixth—or from three to three and a half millions below the estimated average yearly produce of the country. Under the existing lack of statistical desiderata on this most important subject, the most deliberately formed opinions must be considered more or less vague, and it is with this reservation only that we venture to offer any observations upon it. From a minute survey through a large tract of country just prior to harvest, and from information since collected with great care and from a widely extended range, we are inclined to believe that the deficiency is much underrated. On the other hand it must be stated that harvest was at least a fortnight later than usual, and that we have already had the aid of one million and a half qrs., of foreign Wheat and Flour, nor must the economy consequent on high prices be lost sight of; still we greatly apprehend that we shall require all the Wheat we can procure from every part of the world to enable us to meet another crop. From the previous drain on the foreign depôts the supplies thence to be derived must now be small;—recapitulating what we said on this head in our last monthly report—we can expect little from the United States—none from Canada—from the Baltic only the surplus of their last crop, and this not until April or May,—and, all we shall receive from the south of Europe will probably not exceed 400,000 qrs.

BOOTH, WALMSLEY, & CO.

TUXFORD'S PATENT MACHINE FOR CLEANING WHEAT, BARLEY, OATS, &c.



Two years have now elapsed since we first invited attention to this valuable Machine, invented by Mr. Tuxford, of Boston, in Lincolnshire, and the opportunities which we have had of communicating with millers manufacturing flour upon a very large scale, both in England and Ireland, enables us to fully confirm the good opinion we entertained of it in the first instance. It is in a season like the present, when, from the state of the weather, before and during the harvest, a considerable quantity of damaged and light corn will be found in the bulk of our wheat crop, that the advantages derived from the use of Mr. Tuxford's Machine, in cleansing the sample and improving its quality and marketable value will be most clearly proved. To some the price may seem an obstacle, but it should be borne in mind that a small portion of refuse will deteriorate the value of a sample of wheat and spoil the colour of the flour. A reduction of one shilling per quarter upon one thousand quarters of wheat—no large quantity—will pay half the cost of a machine cleansing five quarters per hour.

The great perfection of machinery for cleaning corn, is its simplicity and cheapness; hence it is, that the winnowing machine has been pronounced, and certainly is, the most efficient machine now in use for agricultural purposes. We do not hesitate to affirm, without fear of contradiction, that Tuxford's Machines are as great an improvement in the cleaning of corn, as the winnowing machine is over the old hand-fan system. To the corn-factor and miller, it must prove invaluable,—to the maltster a source of great gain, as it removes the damaged and perished barley which will not malt, as well as other refuse, thereby improving the quality of the malt, as well as saving the duty on that which is valueless; and to the farmer who may have lost 2s. or 3s. per qr. on his wheat, because it contained seeds and filth, which could not be removed in the ordinary way, it will be an object worthy of attention. Where there is a thrashing machine, there would be no dif-

ficulty in moving the machines by the same power. And where chaff is cut, malt ground, or any other operation of that kind performed by a horse, the same gear might be attached to this machine; but, in the absence of such opportunities, we have no doubt that by means of a fly-wheel, the motion could be so distributed as to allow of its being worked by hand as well as by steam and water.* When we last saw the machine at work, each sieve was cleaning wheat at the rate of one quarter per hour. One person can attend to twelve sieves, being twelve quarters per hour, or one hundred and twenty quarters in a day of ten hours. The Patentee stated that it cleaned oats extremely well, leaving the sample particularly bright and level. It should have been observed that the operation performed by this machine, is that which is called reeing, and is always performed by hand. It does not clean corn from the chaff, but is intended to rid it after it has been cleaned in the usual manner of all the refuse which it is found impracticable to remove in the ordinary way. Few persons would imagine, without being eye-witnesses of the fact, that so much positive dirt and refuse could be got out of wheat apparently quite clean, and which, if suffered to remain, would injure the colour of the flour several shillings per sack.

DESCRIPTION OF THE ENGRAVING.

In the engraving the machine is shown at work, with the attendant. The wheat to be cleaned is in the room or large hopper immediately over the machine, and falls from thence into the sieves by means of spouts. Each spout has two gauges.—the one nearest to the lowest extremity, is worked by a wire

* Since our first notice of the Machine, we find that a Machine was worked by hand for sometime, having a fly-wheel as a regulating power, by Mr. Sanders, corn merchant, of Boston, Lincolnshire; owing to his having increased the size of his Machine from a No. 1, to a No. 4, he has adopted a small steam engine for driving it, &c.

rod hanging from a branch lever, which is centred within the rim that is attached to the under part of the floor above; the other gauge is immediately behind the one just mentioned, and is regulated by a thumb-screw: there is another gauge belonging to the machine, situated on the outside of the sieve, but hid from view in the engraving, it is also worked by a wire rod hanging from the lever that is centred within the rim; this gauge opens or closes a channel that runs from the inside to the outside of the sieve, along which the wheat, after being cleaned, runs for delivery into the round hopper, (shown behind the frame and rigger), and from thence is conducted, either to the stones, into sacks, or to elevators, as may be necessary. Each sieve is suspended by three rods from the rim above, and consists of two parts—the upper part having a wire bottom, fits into the lower part, which forms a box to it, for receiving the dust, small seeds, mice dirt, &c., which is screened through the wire when the machine is in motion; in the wire bottom, near to the side of the sieve, is an opening to the channel; which is opened or closed by the third mentioned gauge, by means of a slide worked by finger and thumb; this opening can be more or less closed, so as to vary the quantity of cleaned wheat passing through it, or, in other words, to keep it longer in the sieve: though the channel passes through the box into which the dust falls, it has no communication with it. In the bottom of the box is an orifice opening into a tube with a sleeve in it, by opening the sleeve, the dust and other refuse is removed, while the machine is at work. The necessary motion is given to the machine by cranks of a particular kind, the pins of which work through bows of iron, bushed with brass; each sieve has a bow attached to its bottom. The cranks are capable of being made longer or shorter, by means of screws; to the upper end of each spindle, (shown below the sieves,) a crank is attached. The spindles work in foot-brasses, fastened to the floor, and also in bearings attached to the frame-work. Each spindle has a rigger with two grooves for catgut; by one it receives motion from the preceding rigger, by the other it communicates motion to the succeeding one. Over the head of the attendant in the engraving, is shown a handle or small lever, which is attached to a horizontal bar extending across the whole line of rims; if this handle be pulled down, the bar is partly revolved, and small tongues are thereby made to press upon the ends of the levers crossing the rims, and they are forced downwards, but the opposite ends to which the wire rods working the gauges are attached, are elevated, and the gauges are thereby opened.

MODE OF WORKING THE MACHINE.

THE FOLLOWING PARTICULARS RELATING TO THE WORKING OF THE MACHINE, WERE OBTAINED FROM THE ATTENDANT AT PAVITT'S MILL, ROTHERHITHE.

Before setting it into motion, see that the cranks are of proper length for the quality of Wheat to be cleaned, (as very little experience accustoms any one to the proper adjusting of all the parts), then regulate the sliding orifices on the wire bottoms, according to the quantity of cleaned Wheat you wish to pass through them per hour, and regulate the thumb-screw gauges in the spouts, so that the feed may be proportioned to the delivery; there must then be introduced into each sieve a quantity of Wheat, between one and two pecks; without there always is this quantity of Wheat in each sieve, the Wheat that passes through them cannot be

properly cleaned; this is done by opening the spout-gauges with the hand, and so allowing Wheat to run into the sieves without allowing any to run from them. After attention has been paid to all these particulars, the handle over the head of the attendant must be pulled down, and the gauge which closes the spout, and that which closes the channel through which the cleaned Wheat passes, will be opened, and the machine properly at work. Without stopping, the machine can now continue at work until the whole of the Wheat to be cleaned is finished. From the restricted eccentric motion of the sieves, the Wheat in them acquires a centrifugal force, and travels spirally from the centre to the circumference; substances, differing in gravity to the Wheat, acquire a different force, and thus garlic, smut-balls, rat dirt, grown and perished grains, pieces of brick and mortar, and other impure matter, are brought to a head or top in the centre of the sieves, and from thence are removed in regular rotation by the attendant. The mice dirt, small seeds, dust, hairy or brush end of the Wheat, and other small substances, pass through the wire bottom into the box below, and from thence are removed by opening the sleeve of the tube. Admitting a coarser sample of Wheat was to be cleaned, the cranks would have to be lengthened by moving the screws, so that in the same time the sieves shall be made to traverse a greater circuit; then the slides would be altered so as to reduce the size of the orifices, and so keep the Wheat longer scouring in the sieves; and the thumb-screw gauges would be lowered so that the feed to, and the delivery from, the sieves should be in proportion. The motion for working the machine can be taken from any direction. The spindles which give the eccentric motion to the sieves should revolve 85 times per minute. One-fourth of a horse's power is more than sufficient for working a machine of twelve sieves, the cause of the smallness of power may be readily conceived, when it is known that the weight of the sieves and their contents is supported by the floor above, and the power is merely required to give the eccentric motion to the sieves.

The following are the prices of the machines, &c., in Boston ready packed:—

	Cleans per hour.	occupies a space of	
No. 1.	3 qrs.	9 feet by 7	60 gs.
2.	5 qrs.	9 feet by 9	100 gs.
3.	7 qrs.	9 feet by 13	140 gs.
4.	9 qrs.	9 feet by 17	180 gs.

A single sieve may be had for 20 guineas.

The room must be 7 feet high at the least.

ESTABLISHMENT OF A MODEL FARM IN THE KINGDOM OF PIEDMONT.—We are informed by letters from Turin that the Piedmontese are much interested by an act of great importance in political economy, by which the King, Charles Albert, has signalled the attainment of his eldest son, the Duke of Savoy's majority. He has detached from the regal domains a large tract of land situated in the most fertile and populous part of Sardinia, and erected it into a separate commune, giving it the name of Victor Emanuel, the name of the prince royal. He has ceded it in perpetuity to a society who are to introduce an improved system of cultivation, the object of which is not only to point out by theory but by example, the superiority of a system of independent and unshackled cultivation, over that resulting from the feudal system. This undertaking which has been in agitation for several years past, is considered to be the most important as to beneficial results which has ever occupied the minds of the industrial community.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JANUARY.

For a series of years past, a finer correspondent period of the season than the last month which forms the subject of this report, has not been experienced; indeed, we ourselves are somewhat sceptical whether the oldest man living ever witnessed the commencement of a new year welcomed under such favourable and, at the same time, cheerful prospects, viewed with respect to farming, as has been the present. During nearly the whole of the month, the weather has been unusually mild, which has had the effect of bringing forward the young wheat plants much faster than is often experienced in January, yet it is a source of much pleasure in being enabled to state, from practical intelligence received from all parts of England, that they are by no means winter proud, but exhibit a strong and healthy appearance; whilst it is admitted, by all persons, that the crops, in general, never looked better than at the present time: and that there is a good earnest of an abundant yield.

Out-door farm labours have progressed favourably, though (owing to the late period at which last year's harvest was concluded) in some instances, particularly in the north, the whole of the wheat has not been sown. This circumstance, however, is chiefly owing to the breadth of land cultivated with this description of corn being considerably more extended than was the case last year. We are happy to find that our farmers are aware of the great importance of producing an adequate quantity of wheat to subsist, without the aid of the foreign grower, the whole of England's rapidly increasing population: for they may rest assured that—though by so doing, they may keep the price of wheat to a low point—in the long run, such a praiseworthy effort will be beneficial to the interests of the agricultural community. For instance, when but a comparatively small quantity of wheat is produced in this country, recourse must of necessity be had to that of foreign growth, which has the effect of drawing from us that gold which ought to fill the pockets of our own growers, and consequently of weakening our internal resources and productive capabilities.

The high prices obtained for wheat have induced many persons to procure substitutes for it in the shape of Barley and Rye, which latter have been mixed, in large quantities, with wheaten flour. This accounts in a great measure, for the late extensive enhancement apparent in the value of Barley and Rye, notwithstanding that the supplies have been extensive in most of the principal markets, throughout the kingdom.

Complaints still continue to reach us, from all quarters of the deficiency, on thrashing out, of the Wheat crop produced last season: whilst the quality is represented as, generally speaking, much inferior to that of former years; yet, on travelling through most counties, both north and south of the Humber, we find there is an unusually large number of stacks, of most kinds of grain, untouched. The delivery of wheat, on the part of our farmers, appears to have equalled, in quantity, that noticed on former occasions; and this leads us to the conclusion

that the supplies of wheat which will yet be forthcoming, will prove by far more extensive than is generally imagined.

We have to report favourably of the turnip crop: indeed it is calculated that a finer never was grown: whilst, on most soils, the turnips have not ceased to vegetate, during the whole of the winter.

The early Lambing season, with a few exceptions, has progressed satisfactorily; but it is, as yet, not general.

In Scotland, out-door farm labours have gone on favourably, without any serious atmospheric interruption. The whole of the potatoes have been raised and secured in most excellent condition, and the return has proved very abundant and good. Most of the Wheat, Barley, and Oats on sale in the Scotch markets have been of inferior quality; consequently, the currencies of the superior kinds have ruled high—the best white Wheat being worth, at Edinburgh, 90s. per quarter. However, lower prices, owing to the extreme depression in the trade, are fully anticipated.

From Ireland our intelligence is very satisfactory. The prevailing prices are fully compensating any loss which the agriculturists may have sustained in the produce of grain; whilst the growth of Potatoes has scarcely, if ever, been exceeded in any former year.

The rapidly approaching parliamentary campaign is looked forward to with most anxious solicitude on the part of the agricultural interest, as a strong effort will be made, in its early part, to abrogate the present existing Corn Laws. That their entire abolition would be productive of manifest injustice to those whom they more immediately concern, no rational person appears inclined to doubt.

The following is a comparative statement of the supplies and prices of fat stock exhibited and sold in Smithfield Cattle Market during the month:—

The supplies of beasts have amounted to 10,154, of sheep 128,492, of calves 1,128, and of pigs 4,045. As is usually the case for some weeks immediately succeeding the great Christmas Show, but few really prime beasts have been offered for sale; whilst a considerable falling off has been apparent in the numbers of all kinds of stock exhibited.

About 720 of the Scots, homebreds, and runts, which have formed part of the above supplies, have come from Norfolk; 220 Devons and runts, from Suffolk; 190 runts, Herefords, and Devons, from Essex; 213 Scots, Devons, and Herefords, from Cambridgeshire; 930 short-horns and Devons, from Lincolnshire; 940 short-horns and runts, from Leicestershire; 412 Devons and short-horns, from Northamptonshire; 400 Devons, runts, Scots, oxen, and Irish beasts, from Warwickshire and Oxfordshire; 500 Devons, from Devonshire; 400 Herefords, from Herefordshire; 212 Scots, by steam and sailing packets, from Scotland; 90 oxen, runts, and Devons, from Sussex; 75 cows, Devons, and Herefords, from Surrey; 50 Devons, cows, and Scots, from Kent. The remainder, from the immediate neighbourhood of London.

A fair supply of meat has arrived up to Newgate and Leadenhall markets, slaughtered in various distant parts of England and Scotland, it being com-

posed of 190 carcasses of beef, 2,500 ditto of mutton, 2,400 ditto of veal, and 6,500 ditto of pork, the quality of which has been prime.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, January 29, 1838, and Monday, January 28, 1839.

	At per 8lbs. to sink the offals.							
	Jan. 29, 1838.		Jan. 28, 1839.		s. d.		s. d.	
Coarse & inferior Beasts	2	2 to 2	4	..	2	6 to 2	10	10
Second quality do.	2	6	3	0 ..	3	2	3	4
Prime large Oxen.....	3	4	3	8 ..	3	8	4	4
Prime Scots, &c.....	4	0	4	4 ..	4	6	4	8
Coarse & inferior Sheep	3	0	3	6 ..	3	6	3	10
Second quality do.	3	8	3	10	..	4	0	4
Prime coarse woolled do.	4	0	4	4 ..	4	4	4	6
Prime Southdown do..	4	4	4	6	..	4	8	4
Large coarse Calves ..	4	8	5	4 ..	3	10	4	8
Prime small ditto.	5	6	6	0 ..	4	10	5	4
Large Hogs.....	3	4	4	8 ..	4	0	4	10
Neat small Porkers ..	4	10	5	4 ..	5	0	5	4
SUPPLIES.								
	Jan. 29, 1838.		Jan. 28, 1839.					
Beasts.....	2,994		2,602					
Sheep	26,598		24,941					
Calves.....	140		115					
Pigs.....	380		325					

By the above comparison, it appears, that the supply of Monday, Jan. 29, 1838, embraced 392 Beasts, 1,457 Sheep, 25 Calves, and 55 Pigs more than that of Monday, Jan. 28, 1839.

EAST LOTHIAN AGRICULTURAL REPORT.—OBSERVATIONS ON FURROW DRAINING, &c.

December has been characterised by all the varied phenomena, incident to the weather of winter, but has been throughout of such a nature, as to admit of the successful performance of the various labours peculiar to the season. The progress of out-of-door work has never been arrested by frost, consequently, ploughing is about as far advanced as is general at this period of the year. The young wheats, owing to the genial freshness of the weather, maintain a healthy aspect; and in the plants in general considerable vigour is perceptible. The corn markets still continue well supplied, and prices have recently evinced a disposition to advance. The annual Christmas Show of live stock, under the auspices of the district agricultural society, took place at Haddington, on Friday, the 21st of December. The stock brought forward, particularly sheep, were superior to anything shown for some years. Mr. Brodie, Armiefield Manes, was the most successful competitor in this department. A pair of cattle from Biel, property of Mr. Ferguson, of Raith, M.P., and fed under the immediate inspection of the active and intelligent superintendent of his estate, Mr. Ker, carried off the premium in the cattle department of their class. These animals were universally admired, and reflected great credit on Mr. Ker's management. In our last report, we adduced some theoretical notions on the subject of furrow draining, and in the present one it is our intention to give a succinct account of the manner in which these drains are usually executed by farmers in this district. The object of furrow draining, is the removal of such water as may be stagnating on, or near the surface of such lands in tillage, as are of a homogeneous clayey consistence throughout, or those which are superficially of a freer texture, but superimposed upon an adhesive subsoil, and which admit but in a moderate degree of the passage of water through them. An arrangement of the ridges and furrows of a field, however judicious, will not entirely rid a soil of its redundant moisture, as a considerable part of the water which falls on the surface sinks into the soil, and if the soil be tenacious to a considerable depth, it is re-

tained on, or near the surface, and by lowering the temperature of the soil, exercises a deleterious influence on vegetation, as well as prevents the farmer from judiciously labouring his land. The formation of subterranean channels, becomes therefore necessary, to carry off this superabundant humidity; and the system of draining adopted for this purpose is called "furrow draining," from the drains being dug in the furrows of the ridges—a system of draining, which is now extensively adopted on all clay land farms in this county; and the extensive introduction of which must be regarded as the greatest improvement which has taken place in the agriculture of modern times. The fields in this county are usually laid out in ridges, between sixteen and eighteen feet wide, the former width being most general on those soils which are of a tenacious nature; and the latter are those on which furrows are not required to carry off superabundant moisture, but merely to regulate the series of operations incident to seedtime and harvest. By a system of ploughing termed "gathering," a certain curvature is given to the ridge, which serves to conduct the water to the furrows. And in the furrows of the ridges, as has been said, the drains are dug to a depth varying as was formerly hinted, according to individual opinion, and the nature of the soil, but generally from two to three feet deep; but as shown in our last report, certain advantages would result from their being carried considerably deeper. When the surface of any field undulates, receiving or leading drains as they are sometimes called, are dug across the ridges in the hollows of the field, and into these the lesser drains of the furrows discharge themselves. These leading drains again disgorge their collected water, usually into the open drains or ditches of the farm, which carries the water to some neighbouring rivulet, to be conducted back to recomingle with the wavy water of its native sea. In the excavation of the trench the topmost earth is usually taken out with a broad pointed spade, and when the drains are to be carried two-and-a-half, or three feet deep, another spading is taken out with this implement, and the bottom of the drain excavated with a spade of smaller dimensions. This instrument is used for the purpose of making the bottom of the drain, only sufficiently wide to hold the tiles, (which are now the chief draining material in use in the district), and to retain them in their place; but when other substances, such as stones, are to be used as draining material, the trench is entirely dug with the common spade. In the trench thus formed the tiles are placed; these tiles, which are of a semi-elliptical, or arch-form, are made about 15 inches long, 3 wide, and as many high, and are formed at manufactories, a number of which are established in this district. In recently erected works of this description an apparatus, the invention of the most noble, the Marquis of Tweeddale, and usually propelled by steam, is used to form the tiles; and the neatness and dispatch with which it performs this is described as being truly admirable, and far superior to the former method, of making them by manual labour. The tiles are usually brought forward to the land, before the work of excavating the drains commences, and when draining is performed at this season of the year the trenches should never be opened until the tiles are brought forward, and when the work of excavation is completed the tiles should be immediately placed in the drain, and the trench filled in. By neglecting this serious loss may be sustained, for the trench, if overtaken when open by an intense frost, may be entirely closed. The labour and expense of excavation will thus be nearly doubled, and the sides of the drain sustain very serious injury. Two methods are adopted in placing the tiles in the field, when they are brought forward before the trenches are opened to receive them. They are either laid singly along the edge of the furrow, where the drain is to be dug, or they are deposited in heaps on the ridges, where they are to be used. When brought forward during the winter season this last is perhaps the preferable, although perhaps the more expensive plan, as when tiles lie singly on the surface of a damp soil they imbibe moisture, and

should frost occur when in this damp state they will assuredly be reduced to powder. This is an effect of that expansive force which water is known to exert in freezing, and the evils which result from it may be evaded, by keeping the tiles dry, and the method of storing last described, will effectually secure this. We have known serious loss sustained from the exposure of ill burned tiles, and no farmer should use tiles of this description, as they will never last so long as such as are well burned. When the trench is formed, and the tiles brought forward, and laid along the edge of the drain, a person, who ought to be a trustworthy man, places them in the bottom of the drain, walking backwards. When the bottom of the drain is hard and tilly, it is considered unnecessary to use flats or soles, but when from the softness of the soil, a probability exists of the tiles sinking into the earth, soles are always placed beneath the tiles: these soles are sometimes flat, and sometimes of a concave form, which last is considered the preferable shape. Some farmers place stones or other substances above the tiles, but experience has amply demonstrated that this is unnecessary, the natural porosity of the most tenacious soils being of itself sufficient to afford a passage to the water, to its subterranean channels of egression. A little straw, perhaps, placed immediately above the tiles may be beneficial, as this, although not a durable substance, will serve to intercept any sediment, until the soil assumes its natural compactness. When straw is used it should be converted into the form of thatch, as this will not only serve to economize it, but enable the farmer to apply easier and more effectively. When the tiles have been placed in the manner described, the next operation is the filling in of the trench. Care is taken, by judicious farmers, that the earth from the bottom of the trench shall be placed next the tiles, as this, if allowed to mix with the surface soil, would greatly deteriorate its quality; and, if the earth of the trench be mixed with stones, care is taken that it is not thrown in at first carelessly, as by doing so tiles may be broken, and the labour of the farmer rendered altogether nugatory. The soil, after being loosened, having a tendency to assume a diminished volume, the whole taken out should be carefully shovelled over the drain, to provide against this recession of the soil. And here we may remark, that this phenomenon exhibited by the loosened soil, incontestibly proves that all soils must be porous, for the space by which the volume of the soil is diminished must, before the diminution, consist of pores. Such are the series of operations incident to furrow-tile-draining, and the expense attending this improvement, per imperial acre, when the ridges are sixteen feet wide, may be estimated as follows:—

To digging 151 roods of drain at 4d. per rood	£2 10 4
“ 2,265 tiles at 35s. per 1,000	3 19 3
“ Putting in tiles and filling in trench, 1d. per rood.....	0 12 7
“ Carriages.....	1 0 0
	£8 2 2

From the above statement, it must be obvious, that few farmers possess the means of entering extensively upon an improvement attended with such an outlay, and it is satisfactory to perceive that landlords begin to evince a willingness to assist tenants in the execution of this improvement; and in recent leases, where the land was found to stand in need of draining, pecuniary assistance has generally been extended to the tenants. Nor are the tenantry the sole gainers from this liberality; for drains, if judiciously executed, and carried to a proper depth, will last over a lease of ordinary duration, and when the farm may come to be again let, it will of course be taken at an increased rental, and when at the letting of a farm it is known, that assistance in draining is to be afforded, a greater rent is given. To compute the advantages resulting from the thorough draining of wet land, would be no easy task, as a variety of advantages result from it, besides an increased produce. But to the latter at the present time we will alone refer. Individuals who have drained extensively, and who on this account are quite capable of judging of its merits,

appear to think that by furrow draining, thoroughly executed, an increased produce may be obtained, amounting to twelve bushels per acre. This will much depend on the nature of the seasons, but in a wet one, and where the drains are carried sufficiently deep, the increased produce will fully reach this quantity. What a pleasing theme for cogitation does this present to the statesman and philanthropist? What might Britain not become from the thorough draining of all the land, within her encircling seas, which stands in need of this improvement? Instead of living in dread of famine as we do at present, want with us would be totally unknown. Instead of depending on the caprice of the foreigner for a supply of life's necessities, we might become a grain-exporting nation, and realize the fond anticipations of the Bard of the Seasons, by becoming “The exhaustless granary of a world.”—Jan. 7.

SOMERSETSHIRE.

The past month is one on which there is little to remark of progress in agriculture, and perhaps generally speaking, as little depends on this period as any during the year, either in raising the expectation or clouding the hopes of the tiller of the land; with graziers it is an animated season, his best and choicest goods come to market, and his honours and profits are realised, or disappointed; whatever may have been the results as it affects individual expectation, it is generally acknowledged that the shows of fat stock have been better than for many years. Those who sold the beginning of the month did pretty well as to price, but up to the end of the month, the depression in the price took off much of the expected profit, and this more particularly applies to mutton from the sheep being purchased so high, indeed the high prices given by the grazier for his stock when bought left him little prospect of a fair return, notwithstanding the apparently high and steady price of meat, and advance on the offal—owing to the high price of bread the poor have not been able to afford the usual indulgence of roast beef at this season, and the sale of meat has been not so good in the country. The price of pork also has been on the decline, in consequence of an increased supply, it is worth from 8s. 3d. to 8s. 6d. per score. Our best prize beef was worth about 12s. to 12s. 6d. per 20 lbs. to sink the offal; second quality 10s. to 11s.; mutton, 6d. to 6½d. per lb. Our markets for beef and mutton have been rather better lately, the quantity of both not being very abundant, but the advance of beef at this season is supposed to be eventually more good to the breeder than the grazier. The winter has hitherto been favourable for the hay, the stocks of which, particularly of inferior quality, are not over-abundant. We have had but little demand for cheese, and the price has rather gone down, although the supply is by no means large. There was some business done early in the month in wool, at higher prices, but although there has been no material decline in price, there was less disposition to purchase as the month advanced, 17d. to 18d. for long wools; 18d. to 19d. for horned and Down of fine combing qualities was had. A scanty supply of wheat at our principal markets most of the month, but it has gradually increased up to this time; and the millers, although the demand for flour has been good have been increasing their stock, still it must be remembered, the bakers buy as little as they can help, and we must not expect the present supply to be kept up beyond the middle of next month; last week 10s. 9d. was given readily for new wheat, and 11s. to 11s. 6d. for old, but I should quote the present prices 10s. to 10s. 6d., and 11s. old, of the latter there is very little left, and the quality of the former, except during the damp weather is spoken pretty well of, but I have no improved account to give of the yield. The present high prices have given an impetus to the advocating of free trade in corn, and it is argued that if we had been constant purchasers of foreigners, they would have been provided with a better stock to make up our deficiencies. Take the duty entirely off, and no doubt for a few years the price of corn would come down sufficient, not only to throw all our poor, and most of our

inferior lands out of cultivation, but at the same time render our markets *so unprofitable to the foreign grower*, that these causes combined with such a bad season as the last year is generally acknowledged to have been, the price will rise, we should have no stock of our own to depend on, the stock abroad will have also fallen off, and their ports as is now the case in some instances will be closed for exportation; and we shall be likely to suffer more than we ever have during the existence of the present corn bill by *real scarcity*; and for what are we called upon to run this risk, and sacrifice of property invested in land and agriculture? that the manufacturer may get labour cheaper, by the operative having bread cheaper, but less money to purchase it with. I believe it will be found, should the experiment be tried, that the parties so earnest for an alteration have grievously miscalculated the beneficial effects of a free importation of corn, for allow that *they will be able to lower wages*, and there will be an increased demand for goods from abroad in exchange for corn; the raisers of wheat in this country must in consequence, to a large extent employ their capital and labour in manufacturing goods, and thus become *competitors* in the foreign market with those they had heretofore been *exchangers* of wheat for cloth, &c., &c.; but in spite of continued exertions that other nations are increasingly becoming our successful competitors in manufactured goods for years past, in consequence of the high price of bread; our *exports* have been *increasing*, the raw material greatly enhanced in value, and our *manufactories flourishing*, neither has the *average* price of corn on the whole been high, or its fluctuations great since the bill has been in force; these are facts, and we can gain more useful experience, and it is more safe to be guided by what has passed than by theoretical speculations on the effects of an altered system for the future—but these remarks are digressive from the legitimate subject of my communications, and I return to the state of our markets for corn. In barley there has been a great advance, mostly in consequence of its consumption for food, and its being ascertained that the yield is not so good as expected, 32s. to 34s. was the price the commencement of the month, but it gradually, and more recently rapidly advanced to 40s., and in some instances as much as 44s. per qr., and 38s. to 40s. for grinding purposes, with a great sale. The price of oats has also advanced from 18s. and 24s. to 20s. and 26s. per qr. Beans 4s. 6d. to 5s., and 5s. 3d. new, old 5s. 6d. to 6s. per bushel, in all these crops disappointment being the result of the yield being ascertained. Although in a few instances the wheat plant has gone off free of grub, &c., on the whole it is looking very promising. There are some complaints of the lambing season, but it is not yet generally commenced.—Jan. 11.

EAST CUMBERLAND.

Wheat sowing in East Cumberland, though it cannot be said to be entirely finished, yet it is nearly so, as there only remains a few acres here and there of turnip land that have now to be sown. The opportunity for getting in that important crop has, comparatively speaking, been favourable, considering the cold wet summer, and consequent late season. The fallows were of course in a bad condition, as it was totally impossible to get them properly prepared; and its being so long before the fields were got cleared of potatoes, that wheat after them was very late in sowing, and is only just beginning to make its appearance above ground, indeed much of it has not yet come up. But on bare fallow, where it was got sooner in, it is up, and looking quite as well as could be expected. The breadth sown may perhaps be about an average quantity, as there were patches left for Spring corn, on account of their wetness; to make up for this there may have been some land sown with wheat that, had it not been for the high price which it now brings, would have been left for barley. Out-door work has progressed pretty quickly, and the arrear has been got well up, in consequence of the favourable weather since Martinmas. There was perhaps never more stubble land ploughed at this period

of the year, the frost being seldom, or never, so severe as to prevent that operation; though it has now set in with a severity, as if determined to make up for past mildness. It commenced on the evening of the 7th, accompanied by a very heavy fall of snow, and was preceded during the day by the severest storm of wind remembered by the oldest person living—a complete hurricane, in fact; tearing up trees, blowing down stacks, unroofing houses, &c., &c. It is to be hoped that the frost will not continue, should it do so, it will press severely upon the labouring class, from the high price of provisions which would not otherwise be so much felt, as work has been, and likely to continue plentiful; all extra hands, that could handle a spade, being likely to be wanted for some time to finish the draining going on; the quantity of which may be inferred from the fact that the tiles at all the different works (about forty in number,) in the county being carted away. These works would produce not less than about 10,000,000 tiles, of one foot in length each, or a quantity sufficient to form *one thousand eight hundred and ninety-three miles* of drain; a pretty fair quantity for one season; and, much as it may appear, it is no exaggeration, as any one who has an opportunity may ascertain by making proper inquiry. Very naturally anxiety prevails as to the crop of the past year, and how far it is likely to meet the current consumption till next harvest. Though it is undoubtedly deficient, and short of an average crop, yet there is no reason to apprehend that there will be any absolute want, nor is it likely that prices will range much, if any, higher than at present, unless, indeed that the next season should unfortunately prove as unfavourable as the last, a circumstance that we have no right to calculate upon. In the first place the quality is by no means so bad as it has been known in some previous years; there being very little of it to call unsound; this is the case in Cumberland, and the other northern counties where the weather during summer was much worse than in the south of England. And the quantity will not prove so short, as one might be led to think from alarmists and interested speculators. If we consider that the harvest was at least a month later than usual, and if the next should be no later than common, there will consequently be only eleven instead of twelve months supply wanting. This fact is amply borne out by the present state of the stack-yards. There was perhaps never less, if so little, thrashed out at this time of the year. The markets being scantily supplied with wheat, it has exhibited considerable buoyancy during the last two or three weeks; something similar may be said of oats; barley has been the flattest of the three, this has been owing in some degree to the maltsters wishing to procure barley from the southern counties, they being afraid the barley grown in Cumberland, as the harvest was so late, would not malt kindly. It must necessarily be coarser, and thicker skinned in consequence, but still there is much fair malting barley. Wheat has been ranging from 25s. to 32s. a bag of three imperials; barley from 14s. to 16s.; and oats from 8s. to 12s. As to the yield, it is impossible to come at any thing like a correct estimate, the accounts are so various. Instances have occurred where four stooks of wheat have produced a bag as above, and it has not been uncommon for oats from good land to yield the same quantity. But these of course are on favoured situations. Again, it has occurred where it has taken seven or eight stooks of the former, and five or six of the latter to give the same quantity. Barley too varies from five to seven, or eight stooks, according to situation, soil, &c. Much of the grain in cold, wet, high lying situations was not carried from the field till late in November, about which time a cold dry east wind set in, and continued for several days, and brought the outstanding grain, where the farmers had patience to give it time, into an excellent condition for housing. And, though it had stood so long in the rain, owing to the coldness of the weather, it had not suffered so much as might have reasonably been expected. But from its being grown on cold land, and in an unfavourable climate, it was not at any rate good. In these cold, high situations, the farmers suffer much in a season like the

last, as they are not at all compensated by the increased price, they having little to sell. Potatoes are rather scarce, and are selling at about 5d. a stone. Turnips were a deficient crop from the first, and are in a rather increased demand for sheep. There are few stall-fed cattle, compared with last year, and there is a good demand for fat, both mutton and beef; and it is likely to increase in demand towards the Spring. The markets for store cattle are now over, and the prices continued to improve till the last. Pork has been selling at from 5s. 6d. to 5s. 10d., and 6s. a stone. Young pigs have been rather higher than they were six or eight weeks ago, say from 9s. to 16s., according to quality.—Jan. 9.

NORTH DEVON.

As the season advances complaints of the last crops become more general, and certainly the wheat has not been so bad in quality for many years; there is no doubt but the deficiency is great, if compared with the produce of several preceding years; and that many farmers on the Moorlands are considerable sufferers by the failure on these parts; some assert that they shall require all they have grown for the consumption of their families, but we are of opinion these reports are exaggerated, and that the deficiency will not prove so great as represented. The supplies of every kind of grain in our markets has been considerably less than noticed at a similar period for at least twenty years, principally occasioned by an impression on the minds of the farmers that there is a great deficiency in some parts (without knowing where), their grain is therefore withheld, with an expectation of realizing higher prices; yet, when we see the stackyards better filled than is usual at this season of the year, we cannot imagine our badly supplied markets proceed from a real scarcity, as it is well known that a considerable number of farmers have not thrashed a single sheaf of corn since the harvest, though in past years their sales have been large before Christmas. We do not expect to see so great a reduction in prices as in 1818, when 8s. per bushel was refused in this district for thousands of bushels of barley, which were afterwards with much difficulty sold at 3s. 9d. to 3s. 10d.; yet we should not be surprised to see a considerable difference, for if the price of barley, or other grain is brought to a stand, or trifling decline, the pressure of large quantities on the markets will oblige the growers to submit to rates much below what would have been realized if the supplies had been sent in a regular manner. Barley and oats have been brought to market more freely in the last two weeks, it may be said that oats are now offering in large quantities, but there is still more reluctance to sell barley than we have observed in any season before; this arises partly from short supplies, and partly from the great demand for this article to make bread; the shortness of the supplies may in some degree be accounted for by the lateness of the harvest, as the farmers have been much occupied since in preparing their seed wheat, sowing the same, and securing the potato crop: this work was much retarded by the extremely stormy and wet weather that has prevailed since the middle of November, and prevented many from finishing until near Christmas; yet, although the weather has been mostly wet, we have had some days of very sharp frost, more particularly on the 9th, 10th, and 16th of last month. The demand for barley and oats has been greater than could be supplied, and the eagerness of some agents to purchase the former article for Scotland, has brought the price to about 40s. per qr. to the growers, though the season commenced at 26s. to 28s. for the same quality of grain. The price of wheat for several weeks has been from 11s. to 12s. 6d., and some prime samples have realized 13s. per 67½ lbs.; when such high prices prevail complaints are frequently made that do not really exist; it is now said that barley yields badly; we are ready to admit there is a larger portion than expected very thin and light, but when the quantity of straw is compared with the produce of former years, which were proved to produce full average crops, we are of opinion that a deficiency of quantity cannot justly be complained of. Oats are also said to fall short in their yielding, yet every person from

whom a fair report can be obtained, will allow that the crop is beyond an average, and that the quality and colour is mostly good; as a quick sale is obtained, the growers are enabled to realize from 9d. to 1s. per bush. above what they calculated on at the close of the harvest. Turnips were never finer, and as they remain uninjured will be found particularly useful; the early sown wheat looked remarkably healthy until within the last four or five days, since which the storms of hail and snow have made the plants to look almost as bare as if the fields were newly ploughed. Fat bullocks are sufficiently plenty for the demand, at 9d. to 10d. per score; fat pigs at 7s. 6d.; complaints are made in various parts of the rot and scab in sheep, and many are lost in these diseases; good mutton is worth 5½d. to 6d. per lb. Some complaints are found among the working classes of the high price of provisions and lowness of wages; but as a large portion of the labourers in this district are engaged in agricultural work, most of their employers furnish them with wheat at 8s., and barley at 4s. per bushel, with other articles in a proportionate manner, which is found of much assistance to them; and as they have in general small allotments of land, sufficient to grow potatoes for their families' use, at an easy rent, they are placed in a better condition than many in other parts where higher wages are given. At North Molton the parishioners have determined on a voluntary assessment for the purpose of raising a sufficient sum to provide bread for the families of the labourers in proportion to their numbers instead of increasing their wages; this method will be followed most probably by other parishes in which it may be necessary. We had written thus far yesterday, to-day we find there was a very dull sale for wheat at Bideford market at a decline from 1s. to 1s. 6d. per bushel; but the sales of barley and oats were firm at rather higher rates.—Jan. 8.

CAMBRIDGESHIRE.

The weather throughout the month has been changeable, but upon the whole very mild for January, which circumstance is calculated to suit our hay stack-yards, as they were badly stored. The turnip tops on some of the forward soils are beginning to sprout, and will be very forward, should we not have a continuation of severe frost, and which seldom happens, when it does not set in before this period of the year. Those who have forward lambs will, in all probability, be well supplied with green food, which has not been the case these last two or three springs; and the only means used to procure their existence was a resort to artificial food, consequently were reared at a very heavy expense and loss. The fat stock markets are well supplied; our best white-faced fat sheep are now selling from 5d. to 5½d. per lb. But, complaints are heard of the rot in sheep having again made its appearance upon some of the dampest land. I understand that Government contracts have been taken for the next two months, over the greater part of the kingdom at the ruinously low price to the grazier of 4d. per lb. Our corn markets are rather cheaper, wheat about 6d. per bushel, and barley from 3d. to 6d., peas and beans about the same, with a dull sale. There is a short supply of oats, which fully maintain their former prices. It is calculated that one-third of last year's crop of barley has been ground for bread, to make up for the deficient crop of wheat, and which has caused the rapid advance in that grain; but had the farmers been left to the *tender mercies* of the London brewers, and have had no assistance from their friends in the north, they would now have had about 32s. per qr. for their best barley, instead of the present prices; but it is too late for the brewers to influence the markets this season, they will now be looking at each other, to know who is to get the most of what little there is to spare; as the barley thrashing is very forward, owing to the high price which it has realized, and assuredly the farmers have nobody to thank for it, as it is only the want of that commodity which has given them this year a remunerating profit. The British farmer appears to be surrounded by enemies. I am happy to learn that a meeting of the Cambridgeshire Farmer's Association is to be held at Cambridge on Saturday

next, to petition the legislature against any interference with the corn laws; and it is earnestly to be hoped that petitions will be sent from the owners and occupiers of every parish in the kingdom, stating the number of acres that each occupies, that we may show to the tender hearted gentry of the Manchester Chamber of Commerce and elsewhere, who confess they "owe no allegiance to the shores of England," that the agriculturists, as a body, *do owe*, and glory in *their* allegiance to these shores; and, consequently, as loyal and constitutional subjects, claim and demand from the legislature a just protection to their rights and privileges, and who feel determined to resist to the utmost any interference with them, feeling as they do thoroughly convinced that any intermeddling with the corn laws would have the effect of throwing at least half the land out of cultivation, and depriving the British peasantry of the only market for their labour, and which must always depend upon the supply and demand. It certainly must be a matter of perfect astonishment, that common sense does not point out to the operative manufacturers, that the only object their employers can have in view is, first, to have cheap bread, and then to lower their wages in proportion. I would say to these gentry of the Chamber of Commerce, who have informed us that amongst a very few of them within the last quarter of a century they have accumulated wealth enough to purchase the whole Peerage of England—if you are dissatisfied with *these laws, which have given you so much in so short a time*, the sooner you leave these shores, to which you say you owe no allegiance, the better. As ingratitude is despicable in any shape, one thing the money-manufacturing lords of Manchester may depend upon, that all their agitation against the corn laws will never mislead the agricultural peasantry, as they have proof positive before them that they are better off now, *with the increased rate of wages*, than they would be with cheap corn and *reduced wages*, which must necessarily follow, well knowing they have no more rent to pay when they earn from ten shillings to fourteen shillings per week, than they have when their earnings are from seven to ten shillings; no more for their fuel; no more for their shoes, &c.; and he is not only employed in this advance himself, but his family are all employed at advanced wages also; and this is not all—he is sure to keep this employment with a fair price of corn, he being certain if A will not employ him B will, and this also gives him a little more honest independence. After all, who are the manufacturer's best customers—but the landlords, the tenantry, the agricultural labourers of the United Kingdom, and their dependents? (and the latter will include a great number), as only half, or less, of the extra earnings of the labouring population is required for bread, and the surplus must be spent in clothing, &c., and which must ultimately benefit the manufacturers. I will at the same time do them the justice to confess, that they are also our best customers, so long only as they are willing to give us such a price as will remunerate us for our skill and capital. There is one important point, which most closely demands the attention of all agriculturists, whether Whigs or Tories, I would say to them, watch narrowly the conduct of your representatives at the next meeting of Parliament; and should a dissolution take place, to endeavour to carry this corn law question, and which is apprehended will be the case,—*return* such men, only, as have *proved themselves*, and are *likely to prove*, your staunch supporters.—Jan. 24.

SUFFOLK.

Up to the present time we have very open weather, and all kinds of stock have been shipped off, on the pastures by day, and at night taken into the yards or folds, and have done particularly well; from the same cause out-door work has not been impeded, indeed we never saw so many agricultural improvements going on as at the present time—draining, ditching, carting manure, lime, &c., &c.—ploughing for beans and peas, and forwarding the summer tilths for mangel wurzel and Swedes by laying the land on ridges, have all been performed in most admirable order. The appearance

of the young wheats, winter vetches (the cultivation of which is considerably on the increase), also winter oats, and the clover layers, are as luxuriant and promising as the most sanguine can wish; within the last fortnight the wheat markets have had a most salutary check, the merchants and millers act with the greatest caution, and we speak within bounds when we say the difference in the price of wheat this week with that given two weeks since vary from 6s. to 10s. per qr. We are happy to say agricultural wages have very generally been increased to 11s. and 12s. per week, and from the quantity of out-door work going on we doubt not many labourers have been enabled to earn from 15s. to 17s. per week with the assistance of a little boy—in fact we know of many cases where the earnings have even exceeded that amount. Since the high price of wheat the new poor law has had a severe trial, but we dare fearlessly assert, notwithstanding the declamations of the demagogues who are travelling the country for the purpose of poisoning the minds of the agricultural labourers, as well as the working manufacturers, that in the *agricultural districts there never was less dissatisfaction*, the farmers have met the high price fairly with increased wages and given the men *additional privileges*, besides employing in every possible way as many of their families as were able to work, keeping birds, or stock, &c. We fear when the tithe commutation act comes into operation, which at present very few parishes are completed (only 12 parishes to Dec. 1838, in this county the apportionments are confirmed) that that will be a greater obstacle to the working of the poor law than all the declamation of political demagogues.—Jan. 25.

WESTMORLAND.

The year just closed has been one of considerable difficulty to the Westmorland farmer, causing him, particularly during the eventful period of seed-time and harvest, great anxiety, and requiring through the whole of it the exertion of all his energies to combat successfully the adverse circumstances to which the constant succession of gloomy weather rendered him liable. The long protracted frost in the spring months deranged agricultural operations much; keeping the plough out of the ground to a late period, and thereby causing the seed to remain in the bags longer by a fortnight or three weeks, than has usually been the case for some years. This too had a most injurious effect on the growing wheat, and no doubt laid the foundation for that defect in the crops which we now feel and lament. The stock of old corn on hand was, we believe, much worn down during the year 1837, and as the lateness of the harvest in 1838 compelled many farmers to use old seed, who were in the habit of using new, this also contributed still further to exhaust the stock which is now scanty indeed. In the course of a ride taken lately through the principal corn-growing districts of the county, we only observed two stacks of last year's wheat, a circumstance unknown for the last sixteen years. There is great variation in the newspaper reports as to the productiveness of the late crop, and while we are led to hope that the Southern part of the kingdom, being favoured with a more genial atmosphere, has secured a fair average crop, there can be no doubt but that through the whole of the counties, north of the Trent, the harvest has been a defective one—in our own county particularly so. The wheat which suffered so much from the continued hoar frost and easterly winds, never rallied as is usual with that crop in May; the wire-worm was seen in many places to commit fearful depredations, and the waste of root shewed early in the year a certainty of reduced bulk. This was succeeded by a drizzling, damp atmosphere, and the diseases consequent thereon to that valuable grain, acquired a full force, the frosts of August, together with maggot and mildew, each contributing to impair the value. It is impossible yet to ascertain with any degree of accuracy, the falling off in produce, but we have met with very few practical farmers bold enough to pronounce it half an average crop, and many who rate it considerably lower. The fallows have not worked well, owing to the wet weather which prevented

the plough from operating, except at short intervals: yet we think there is a larger breadth of wheat sown than was the case for the last two years, and taking all things into account, its present appearance is not discouraging. There are, perhaps, fewer varieties of wheat sown here than in some of the crack counties, but the Westmorland farmer is not backward in availing himself of what he really sees to be an improvement; and experiments are in many cases going on with different new species which are brought into notice. These in our precarious climate require to be adopted with caution, and we impress on the minds of those who are induced by glowing advertisers to try new varieties, to attend to the advice of Mr. Handley, at the Saffron Walden Meeting, which is, "sow them on ordinary land—not warm sunny banks," so as to be certain of their hardihood before risking them to any great extent. Barley is a very variable crop, in some of the best barley-growing portions of the county, say the vales of the Eden and Kent, we hold it a fair crop as regards yield, and the maltsters do not report unfavourably, while on the cold soils, the produce has fallen off to a great extent, and the quality is such as to render it very little fit for malting purposes. This grain, which mixed with rye, used to form the household bread, with the people of the eastern side of the county, has of late fallen into disuse, but in consequence of the high prices, and inferior quality of wheat, much will the present year be consumed by the labouring class, and we hope that the price may remain sufficiently moderate, so as to enable that invaluable portion of the community to obtain enough of it, until Providence again bless us with more productive seasons—it rules at present from fifteen to sixteen shillings per three imperial bushels. Oats were a general bulky crop, for though on stiff cold clays the straw was short, yet the greater breadth of that grain stood well, the extreme lateness of the season had of course an injurious effect on the produce, causing waste and deterioration in the quality: but we opine that through the county there is less reason for complaint in this than any other grain. There is, we perceive, a considerable degree of speculation in the market for oats already, and many people are purchasing their seed even in its present soft state, under the idea that the price is likely to become exorbitant, a notion in which we by no means concur, and which even the present movement may tend to counteract. It is certain that corn of all kinds will be greatly economised, and in none can so much saving be effected as in the article of oats. Turnips are in general poor, yet not to the extent that has been reported, the favourable weather through the months of November and December contributing much to their improvement. The growth of Swedes has increased greatly, and the farmer finds them a main reliance for carrying his stock through the Spring months. It is pleasant to remark on the vast improvement that has taken place in the culture of this crop within a few years, the beautiful ribbling, the admirable hoeing, and extreme neatness of management everywhere observable, are subjects of remark with all who visit the north, and form a most important feature in Westmorland husbandry. The use of bone dust has very much extended the growth of this plant, giving facilities to the farmer he has not till lately possessed. Potatoes, we fear, cannot be quoted as a full produce, yet we are not inclined to give way to desponding feelings with respect to that useful root; the breadth planted was large, and on dry good soils, the returns fair. In this crop also much economy will be practised, and we indulge a hope that it will be found equal to the wants of the consumers, notwithstanding the deficiency which we are free to confess existed on the damp and poorer soils. Grass-seeds may in general be reported good, and in this branch of husbandry the Westmorland farmer is beginning to excel, the breadth sown is now large, and the quantity applied per acre has of late years been much increased, added to which, a judicious selection and mixture is now minutely attended to, as well as a proper adaptation of seed to soil, which has very much improved the pasturage, and consequently enables the farmer to feed more, as well as produce better stock. The practice of under-draining has extended greatly, and

the introduction of tiles has given an extraordinary impetus to this operation, which may reasonably be called the foundation of all good management. It is pleasing to observe the number of labourers employed in this department of field work, who are enabled to obtain bread by it through the dreary months of winter, and are at the same time contributing to increase the staff of life in future years. Fat stock are in tolerable demand, and as the quantity up for winter feeding is not so large as usual, from an apprehension that the turnip crop might fail (oats and oil cake being also high in price), it is more than probable that the price of meat may be considerably enhanced in a few weeks; we are likewise led to this conclusion from the knowledge that the supplies to be derived from Ireland will fall considerably short of former years. Store cattle have been much in demand at good prices. The markets at Kendal, Kirkby Lonsdale, Temple Sowerby, and other places where the farmer is wont to lay in his winter supply, were well supported, and up to this period lean stock are in ample request. In breeding cattle, the Westmorland farmer is beginning to feel a strong interest, and high prices are now given for good specimens of short-horned cattle. This, we are aware, has existed with a few spirited farmers, whom we could name, for some time, and with deserved success; it is now diffusing itself generally, to which the encouragement afforded by the lately established agricultural societies, and also the high rates of stock at some recent sales have mainly contributed. We hail this as an important feature in our farm management, and have little doubt but that the spirit, perseverance, intelligence, and industry of Westmorland farmers, will enable them ere long to compete successfully with the breeders of Durham and Northumberland. Pigs are also improved much in form and feeding quality. A gentleman residing in the northern part of the county, was the owner of a boar, which received the first premium at Penrith two successive years, also that of the Highland Society at Dumfries, and has since been successful at Hexham and other places. This breed is now in high repute, and much sought after. Pork is plentiful, varying from 5s. to 6s. per stone. Wool has been in good demand, and is mostly sold up. We would fain hope that the condition of the labourers in husbandry is as good with us as in any other county, employment being plentiful, and trust that our "bold peasantry" will be enabled by their considerate employers to brave the rigours of winter, and the pressure of advanced prices, without being subjected to those privations incidental to the labouring classes in more populous and less favored districts.—Jan. 1.

AGRICULTURAL COLLEGE.—A college for the education of those who are destined for agricultural pursuits is about being established in the vicinity of Maidstone, under the title of the Kent School of Agriculture. The course of instruction will embrace the following branches of agricultural knowledge, both experimentally and practically, viz.—Gardening, planting, and the general management of farms and woods; and with that view the mode of cultivating arable, pasture, hops, &c.; the nature of different soils, their chemical properties; the manures proper for each; and the formation and economy of manure. The different courses of husbandry; the best rotation of crops in different soils; the knowledge of grains, seeds, &c. Draining, the irrigation and improvement of grass land, &c. The knowledge of useful animals; how to breed, feed, and treat them; their points, condition, and diseases. Agricultural book-keeping and accounts. Agricultural mechanics; the power required to draw given weights, and how to combine speed, power, and economy in draught; the construction of farm-buildings, cottages, &c.; and the construction and the use of implements of husbandry. Surveying and valuing lands, &c., &c. Such an establishment could not fail to exert an extensively-beneficial influence on all within its sphere of operation.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

LINCOLN FAT STOCK MARKET.—There was a fair supply of good Sheep, and plenty of buyers being in attendance, nearly the whole were sold at rather better prices.—The supply of Beasts was also good, and maintained late prices; some were turned away unsold.

GRAMPOUND FAIR.—The supply of fat bullocks was not large, and prices were from 53s. to 58s. per cwt. Stores were more plentiful, and high prices were given for them. There was also a considerable number of sheep, which sold from 6d. to 6½d. per pound.

BANBURY FAIR has been a large one. Horses were not so plentiful as buyers, and good ones made capital prices. Beef and mutton were both in great demand, and have gone off briskly at advanced prices—the latter mostly made 7d. per lb.

NEW THRASHING MACHINE.—On Tuesday last a new hand thrashing machine was exhibited at the Lewes corn market, the first merit of which is its cheapness, (its cost is only a few pounds), and its second, that it will thrash about 4 quarters of wheat daily; two men are employed in turning it, and two others in feeding it and clearing the straw away. This machine, instead of diminishing manual labour, increases it, by giving employ to those labourers who cannot use the flail, and who in wet days could not be profitably occupied. It is very portable and occupies but a small space. John Ellman, Esq., a few weeks back introduced the first machine of this description into the county, and Mr. Cheal, the machinist, has made the one alluded to upon the same principle. As we are led to believe it to be of great utility to the farmer, there is little doubt that it will be extensively used.—*Sussex Express.*

FERMENTATION AN ACT OF VEGETATION.—M. Turpin has lately published his observations upon certain phenomena which he considers sufficient to show that the act of fermentation, concerning which chemists have been so much embarrassed, is owing to the rapid development of infusorial plants. He states, that all yeast, of whatever description, derives its origin from the separation from organic tissue, whether animal or vegetable, of spherical particles of extreme minuteness, which particles, after a certain time, rise to the surface of the fluids in which they are immersed, and there germinate. Their germination is said to be caused by a certain amount of heat, and by contact with atmospheric air. The carbonic acid obtained by fermentation is ascribed to the infusorial plants. M. Turpin considers the act of adding yeast to liquids, when fermentation is languid, as equivalent to sowing millions of seeds in a favourable soil. He calls the yeast plant of beer *Torula cerevisiæ*; he considers each infusion to have its peculiar plant, and he names the whole race of such beings *Levurians*.

Mr. G. Ferris, of Shrivenham, who gained a large proportion of the prizes at the late Bath and West of England show, assured the company that he had never had such a thing as oil cake belonging to him, and that, with the exception of pigs, he had never given his cattle five sacks of corn in the course of the last twelve years. He added, that his custom was to take the calves from their mothers at a fortnight old, and then feed them with three quarts of skim milk a-day, gradually diminishing the quantity till they could eat grass.

AGRICULTURAL QUERIES.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—It rather surprises me, as so many talented and practical men take a leading part in the English and other agricultural societies, that no one has proposed prizes for those cattle and sheep, &c. which can be kept in *good store condition* at the *least* expence, as

that is of far more importance to the farmer than how much money can be expended on a single animal, for if all feeding cattle were to be made as fat as the show beasts in Sadler's yard, all the graziers would be ruined in two years. For instance—

Which breed of sheep will bear "putting thickest" on a field of mixed seeds?

Which sort of sow will "do" best on grass only from May 1 to Nov. 1?

Which sort of 2 years old heifer will thrive best on barley straw, only from Nov. 1 to April 1, allowing 9 heifers to one tasker?

Which sort of bullock, 3 years old, will pay best on one acre of good grass land from April 14 to Nov. 1—allowing also two acres of aftergrass from hay time.

W.

We often hear of most extraordinary weights of Swedish turnips being grown by our neighbours in Scotland—I fancy 4 bushel to the rod a capital crop within 50 miles of London. I wish some of your correspondents in the West and Midland counties would inform us through your valuable Miscellany what they generally grow of Swedes, also white. I fancy (both being "done" equally well), the proportion is 3 bushels of white to 2 bushels Swedes.

GARDENING OPERATIONS FOR FEBRUARY.

If a bed was put up for cucumbers and melons, as directed last month, the young plants will now most probably be fit for transplanting into nursing pots; place three plants in each pot, and plunge them a few inches more or less, according to the state of heat in the bed, and give a gentle watering with a fine rose pot, to settle the earth about the roots; sow a few more seeds in case of accidents; admit a little air in fine days, and also at night if there be much steam in the beds, but guard against frosty winds by hanging a piece of thin mat over the aperture; by the middle or towards the end of the month, if no accident has occurred to the plants, they will be fit for planting out into the fruiting bed; if the heat begin to decline, apply linings; cover up at nights according to the state of the weather.

Cover rhubarb and sea-kale, and put up successional beds for asparagus and potatoes as directed last month.

The temperature of the pinery may now be increased to from 65° to 75°, and it may be found necessary to turn over the bark bed, and to add a portion of fresh tan or leaves to set again the whole in a state of fermentation; the plants when taken out of the bed, should be examined to see if any of them require shifting, air must be admitted freely every fine day, so as to prevent the thermometer exceeding 85° from sun heat; shut up early in the afternoon, and sprinkle the floor and flues with water to create steam.

If you have not commenced forcing your vinery and peach-house, now is a very good time to begin; make moderate fires, so as to raise the temperature of the former to 50° or 55°, and that of the latter to 40° or 45°; admit air and apply the syringe freely upon the branches; about the middle of the month, the temperature of the vinery may be raised to from 55° to 60°, and that of the peach-house to 50° or 55°; give air abundantly until the buds begin to expand.

Keep up a succession of strawberries and kidney beans; let those which were taken in last month, be liberally supplied with water at their roots, and the beans frequently syringed over head, as they are liable to be infested with red spider.

Maintain a moderate heat in the plant-stove; attend to the training of climbers, and destroy all insects as they appear; give all the air possible to the greenhouse in fine weather; a little more water will now be necessary, especially to such plants as have begun to grow.

Take in roses &c., into the forcing department, to succeed those taken in last month.

Pot the roots of such dahlias as you wish to increase and place them in pits or forcing-houses wherever you have room.

About the middle of the month, prepare a moderate hot-bed on which to sow tender and half hardy annuals, when the seeds vegetate, air should be given freely in fine days; cover up at nights in case of frost, a few hardy annuals may also be sown about the end of the month in the open borders.

Plant ranunculuses, anemones, and hardy herbaceous plants of all sorts if the weather be mild and dry; transplant carnations and pinks which were propagated last year, into beds or into pots, to be shifted afterwards into larger ones; auriculas should be looked over; all decayed leaves removed, the surfaces of the pots loosened, and filled up with a little fresh mould; protect tulip-beds from severe frosts and rain; plant edgings of box, thrift, &c., and fill up vacancies in those already planted; weed or hoe rake and roll gravel walks; and poll, sweep and roll grass walks and

lawns; plant deciduous shrubs and trees, and finish pruning as soon as possible; let the flower borders be carefully dug over for fear of injuring the plants which are under ground.

Plant all sorts of fruit trees; finish pruning gooseberries, currants, raspberries &c, if not done last month; prune and nail wall trees of all kinds, and wash the walls as well as the branches to destroy insects.

Sow peas about the beginning, the middle, and the end of the month, the sorts best adapted for the first sowing are, Cormack's new early May, Warrick's early, and Bishop's dwarf; for the latter, the scimitar, improved imperial, and Knight's tall, and dwarf marrowfat; early Mazagan, and long-pod beans the beginning, and Taylor's Windsor, about the end of the month; round leaved spinach, lettuces and radishes at the beginning and end, and cabbages, savoy, celery, parsnips and a few carrots about the middle or towards the end of the month; parsley for a successional crop, and a small quantity of red beet, to come in early; leeks and onions about the latter end of the month.

Transplant cauliflowers, cabbages and lettuces, and plant potatoes and horse-radish about the end of the month; plant garlic and shallots if not already done; give plenty of air to cauliflower plants, and lettuces in frames and under hand-glasses, and remove all withered leaves and weeds; see that your mushroom beds be well protected from heavy rains and frost; examine your fruit and onions, and remove all unsound specimens; continue the operation of trenching and digging, if not finished last month.

J. T.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF JANUARY.

Since our last publication there has been a considerable advance in the average prices of all descriptions of grain and pulse, as was then very generally anticipated, and the various anti-corn law meetings, which have been assembled in the large towns of trade and manufactures, have increased, in no small degree, the doubts previously entertained respecting the quantity and quality of the last crop of grain, and consequently added to the evils. It is almost impossible to conceive the ignorance displayed by many of the speakers at these meetings without attributing their conduct to feelings as selfish as they are unjust. No means have been neglected by many of them to excite the passions of the great body of consumers against the cultivators of the soil, and even the consequences of the elements have been attributed to those laws, which only partially indeed protect the capital and industry of those who have embarked their talents and property in agricultural pursuits. The present unfortunate high price of bread is placed to the debit of the corn laws, although cool reflection must establish the truth of doctrines, the reverse of those sported at these meetings by traders, and particularly by manufacturers. Many of these gentlemen have collected by their capital, industry and talents, princely fortunes, and there is not one of them, who

has not been most properly protected by the laws of the land, against foreign traders, and foreign manufacturers, interfering with their interests in the home and colonial markets of consumption. We repeat they have been most properly protected in all their operations by the laws of the land, which, in these instances, correspond very closely with the great laws of nature themselves. Every interest in the empire has been, and is now, most amply protected by law, except that of agriculture, to which only partial legal aid has been extended, but, even unsatisfactory, as that aid has as yet been, to it may be chiefly attributed the moderate rates, at which all descriptions of grain, with the exception of wheat, are at present sold; and even on the value of wheat itself, the same cause has had considerable influence. Amongst the senseless complaints, which daily issue from the public press, is the encouragement, which the corn laws hold out to the cultivation of waste, and apparently poor lands, but this fact itself has in no small degree mitigated during this season, great evils, which otherwise must have attended one of the worst corn seasons on record in this country, for large quantities of grain have been produced out of lands, which under any different system, must have continued in a state of nature. If the doctrines of these political economists were

adopted in their fullest extent, a great part of Norfolk for instance must go out of cultivation, for the fields there, which produce the finest barleys in Europe, are composed of a poor sandy soil, which, without capital, would not afford food for a dozen of rabbits on each acre. This is the land however from the produce of which is manufactured a great portion of the best beer consumed in this empire, and this is one of the counties, a great part of which the wisdom of these parties would throw entirely out of cultivation, in order that our manufacturers may be enabled to dress a number of foreign consumers at a cheaper rate, than in former times, they used to be able to procure British rags at for similar purposes. We venture however to assert that no importation of foreign grain, which under any circumstances can occur, would be attended, as a necessary consequence, by an exportation of British manufactured goods of equal value. The great granary of Europe for wheat at present is Poland, and we are certain that to the Poles generally a foreign market for wheat is not of the slightest consequence. This article is not used amongst them, nor is it the property of the actual cultivators of the soil. It makes not the slightest difference in their condition in life, whether prices be dear or cheap. The one adds not to their riches, nor does the other subtract from their wealth. They continue in the same wretched state of poverty and depression, and no brilliant wheat season could enable them to purchase an additional dress from the Manchester or Leeds manufacturers. In these expectations, most undoubtedly, our manufacturers will find themselves very speedily disappointed, and then they will more readily discover the intrinsic value of the home markets for consumption, rendered at present to them doubly so by the encouragement which the laws extend to the proper and effective cultivation of our own fields at home, and in the Colonies. The proprietors of the wheat fields of Poland, which are cultivated by labourers, certainly not in a better state of life than are at the present moment the slaves of the Empire of Brazil, no doubt, by a free trade with the British Empire in wheat, would be enabled to consume in their private establishments a greater quantity of wines, and of other articles of luxury produced in southern climates, than they can do without our markets for the consumption of their produce, but few indeed would be their demands on British manufactures of any descriptions, and therefore the increased demand for manufacturing labour from this source would be small indeed. The observations on this subject which are applicable to Poland are equally so to every country wherein the pursuits of the inhabitants are purely agricultural. Their wants are few, and their poverty most abject; and it has been the most constant desire of the principal leaders in those countries to find employment for what is called the surplus population, by transporting to foreign nations those who cannot obtain living employment at home. Previous to the so much desired repeal of the corn laws, it will be necessary to discover new channels for the productive employment of the great majority of the people of Ireland, for a considerable portion of the agricultural labourers of England and Scotland, and—what the monied interest will like less—remuneration must likewise be found for the losses which the proprietors of the public debt must be subjected to by the repeal of these laws, imperfectly as they perform the du-

ties for which they were enacted. The ruin which the repeal of the corn laws must inflict on all tenants, whether they be agricultural or of any other description, must be followed by consequences to the commercial and manufacturing interests of the most calamitous nature. When the alteration took place in the currency—when a metallic circulating medium was substituted for a paper one—when, in fact, the value of money was increased by upwards of 35 per cent.—traders and manufacturers could discover no other result than their own elevation on the ruin of agriculture. Farmers and many highly respectable proprietors of the soil first yielded to the tempest; rents declined, and manufacturers rejoiced in the prospect of the incomes of the consumers of their handiwork remaining the same as they were previously, and consequently anticipating an increased demand for their manufactures, in proportion to the decrease which had occurred in rents. With the ruin of the agricultural interest, however, the demand for manufactured goods, in more than a proportionable degree, decreased; manufacturing labourers were, to a great extent, deprived of their bread; many of their masters failed, and more than one-half of the mercantile and shipping interests became bankrupt; the mineral wealth of the empire fell under the prices for which it could be abstracted from the mines, and distress became almost universal. Let any one of the corn law repealers study the state of society in this country from the year 1822 to 1830, and strong grounds will be placed before him for not again disturbing, without due consideration, the existing principles of society throughout the United Kingdom; for similar causes, most assuredly, will be attended by similar consequences. One of the certain consequences of an unrestricted trade in foreign corn must be the ruin of agriculture throughout the whole of Ireland, from whence at present the British markets are chiefly supplied with oats, for this article can more easily be imported, and at cheaper rates, from the opposite rivers on the Continent than from the Sister Island. Are the corn law repealers prepared to sacrifice the brilliant prospects which these imperfect laws are rapidly opening to the cultivators of the Irish soil, to a small and assuredly only a temporary increase in the export of British manufactures to the continent of Europe? By a depression in the prices of bread the manufacturing labourer most certainly cannot gain any thing, for the wages of his labour must eventually decline in more than a proportionable degree, and the master manufacturer would eventually be also deprived, at all events, of a large part of the home consumption, which under the present system he enjoys, and by which many of them have obtained very splendid fortunes. To apply the best energies of the empire to the agricultural improvement of nearly the whole of Ireland, and of very large districts in Great Britain, which remain still in almost a state of nature, will do much more towards the productive employment of artisans and manufacturers, than even the most sanguine enthusiast in the free corn trade can anticipate. Had these free trade in corn principles prevailed during the last century, Scotland would still have remained a barren waste, and no small portion of England would have remained useless to the people. It is a most curious contradiction to find that those political economists, who oppose most strenuously the cultivation of uncultivated portions of the soil of Great Britain and Ireland, are the loudest in the expression of their wishes for the banishment of what they call the surplus popula-

tion of the United Kingdom, to the Canadas, to Van Diemen's Land, and to Australia, where they can only receive productive labour in the cultivation of hitherto uncultivated land, a work which is denied to them at home, although the latter, certainly common sense says, should at all events have the preference. To employ the surplus population of Ireland in converting the rich banks of her beautiful rivers and lakes, from wastes into fields of grain, would undoubtedly be far more patriotic than to employ these unfortunate men in labours of a similar description amongst the wilds of the two Canadas. In Ireland, at all events, their labour must always be worth their support, and eventually must also add to the strength of the British empire, and to the general prosperity of her inhabitants; whilst in the colonies it begins with expense to the mother country, and eventually must conclude in rebellion and civil wars. The repeal of the corn laws must not only put an end to further agricultural improvement throughout the United Kingdom, but must also throw back into barrenness large districts of land at present yielding plentiful crops, and in the cultivation of which many millions of property are already embarked; for nearly three thousand millions sterling are embarked in agricultural pursuits, and this immense property, with eight hundred million sterling and upwards invested in the national debt, the proprietors of two hundred millions sterling employed in manufactures of all descriptions have the modesty to require the sacrifice of to their own interest. Many rather absurd calculations have latterly also been promulgated respecting the enormous profits of agriculture, and the injurious consequences which their profits entail on the great body of the consumers of agricultural produce. Still we hear not the names of any individuals, who have obtained great wealth by agricultural pursuits, nor do we believe that any such fortunes have been made. With an inconsistency however, for which it is impossible to discover any cause, these repealers also assert that the tenants pay such high rents that any change in the system would be advantageous to them. That in many instances the rents paid for land have been too high cannot be denied, but in few cases indeed can this evil be attributed to the old proprietors of land. It has its origin chiefly in the enormous profits, which commerce and manufactures have yielded to numerous individuals, who have been engaged in these pursuits. Many of these gentlemen have possessed themselves of land at from thirty to forty years' purchase, and, being well versed in the annual interest to be obtained from money, they screw in rent from their tenants the extreme farthing, which the land can produce, and not unfrequently they draw from them likewise a great part of the capital, which has been embarked by others in their farming property. Pity and compassion for the tenantry come, with a very bad grace indeed, from merchants and manufacturers, for none oftener practise the reduction of wages, even in the face of that increase in the value of the crops of all descriptions, which always and naturally attends an inferior growth of the necessaries of life. Evil communications too, not unfrequently corrupt good manners, for, when any of the old landholders advance their rents, higher than they ought to be, it almost universally has its origin in the example, which has been placed before them, by some new purchaser of a neighbouring property of the same description. Still the rents paid for land, whether they be too high or too low, produce very little effect generally on the prices of the necessaries of life, for these must always be regulated by the commercial rule of supply and demand. If rents

be too high, the tenant must suffer in his capital, and should they be too low, he must add to his wealth in a proportionable degree. In legislating on the supply of this great empire with the necessaries of life, rent of land cannot be taken into consideration, for it will very speedily adjust itself. The great and only consideration is how the people can be employed best in taking from our own soil, whether it be rich or poor, the greatest quantity of food, and every year's experience must fully satisfy the most minute inquirer that agricultural improvement as yet is only on its infancy. Had the late unfavourable corn season occurred only twenty years ago the average price of wheat would have been 120s. per quarter instead of 79s. 8d. as it was on the 24th ultimo. The superior science now possessed by the farmers is the only cause of this great difference in value, because by the great improvement which has occurred in tillage, the growth on each acre at present is at least one-third greater than it was at the former period. The science of agriculture is, however, only in its beginning, but if due encouragement be extended to it by a patriotic government, its progress must be rapid, and its consequences of the deepest importance to the real strength and prosperity of the British empire. The last twenty years have added nearer one-half than one-third to the agricultural produce of the United Kingdom, and during the next twenty years more wonderful improvements may most confidently be anticipated. Surely the admirers of productive labour, the only true wealth of nations, cannot be prepared to sacrifice this boundless field for valuable employment to the people, which many parts of Great Britain, and nearly the whole of Ireland, presents, to the ephemeral labour of manufacture, which is scarcely completed until it decays, and is no longer seen; the one is lasting, the other is only the creature of a day. Generations to come will receive solid benefits from the present day's improvements in agriculture, and it would be an act of national suicide to sacrifice interests so truly great. Without that natural degree of legal protection however, which as we have already stated, is extended to the other classes of society, field improvement must be slow and unsatisfactory, for capital must be embarked in these undertakings, and few will venture to do so, unless under some public guarantee.

With a crop severely injured in many important districts, by the very unfavourable state of the weather, it is at all events satisfactory that the value of grain generally, is not very considerably higher than we at present find it. To the influence of the corn-laws alone can this most fortunate circumstance be attributed, for, imperfect though they be, they at all events, have given a certain degree of confidence to the cultivators of the soil, of which the consequence has been a most decided improvement in the science of agriculture. By the change which has occurred, since the beginning of this century, in the management of land, the crops have been so much improved, both in quantity and quality, that the influence of the elements is at present not of the same consequence, as it used to be, previous to the passing of the corn-laws in 1815, and it is more than probable, that, before the beginning of May next, the progress already effected in agricultural improvement, will show itself in a manner so beneficial to the community at large, that the existing prejudice against the corn-laws will be succeeded by the expression of a universal desire for extending in a much greater degree than is now done, the protection already given to the cultivator of our own fields. With the large quantity of foreign grain which we

must receive from various quarters, previous to the next crop coming into consumption, and the very large supplies which, during the same period, must be sent into the market of our home growth, for sale, the demand for all descriptions of grain must be more than satisfied, and the sales accordingly will in every probability, be more than usually languid for that time of the year. Under these circumstances, should the appearances in the fields be, in any way, cheering, a decline in prices may be anticipated, and a panic may thereby be created, which may render the fall much greater than circumstances may then justify. Until next summer, at all events, it is not probable that any further material advance will take place in the necessities of life, and then ample proof will be given of the capabilities in production of the United Kingdom being, even at the present time, sufficient, on the average of years, for the consumption of the population.

During the month of January, prices of wheat have not varied so much as might have been expected. In the beginning of the month, this article rather declined under the prices which were obtained for it during the month of December, but they afterwards recovered a portion of that depression. The demand, however, again became extremely dull towards the close of the month, the trade generally became heavy, and prices fell from 5s. to 7s. per qr., according to quality.

Although every market, throughout the country, has been rather well supplied with barley since our last publication, than otherwise, still the demand has been more than the deliveries were equal to, and a considerable improvement in prices has been the necessary consequence. A quantity has been taken off in various markets for grinding, and this channel for consumption must continue, until the value of wheat becomes more moderate. Large sales of it have likewise been made to the maltsters, whose stocks at the close of the last malting season were not so large as usual, and, as the quality, in many respects, is fine, nothing, excepting the price, can prevent a more than usual quantity of this article being, during the current season, converted into malt. It is much to be regretted that the malt duty is so high, otherwise the consumption by the brewers might, in a few years, double the quantity now used by them.

Of oats during the last month, the supply has been sufficiently large to prevent any material improvement occurring in their value, but the lateness of the season and the damp state in which a great portion of this crop was secured in Ireland, have as yet prevented the shipments from that kingdom being so large, as they otherwise, no doubt, would have been. They are now, however, either by kiln-drying, or by some natural cause coming into better condition, and being in a proper state to stand a moderate voyage, now the supplies of them, in all the great British markets of consumption, may be expected in future to be unusually large, for the growth of last year has certainly been large, and a decline in their price, though perhaps to no great extent, is generally anticipated. In Great Britain now the production of oats is not so much attended to as it used to be, and generally the crops of this article find sufficient consumption in the neighbourhood of their growth. From Ireland, therefore, we must look for the supply of them for nearly all our large markets in future, and to encourage their cultivation there becomes therefore annually now an object of great interest to the prosperity of this part of the empire, for, to purchase them in that country, must certainly be far more advantageous to us, than to procure them from the opposite

coast of the Continent, even at lower prices. It is not possible that a stronger argument can be urged in favour of the Corn Laws as will duly protect our home growers of grain, than the present state of Ireland; indeed it is unanswerable, for their entire repeal must put an end to agricultural improvement in that nearly uncultivated, though most improvable country, and add, if it be possible to do so, to the poverty and wretchedness of the lower classes of society there. It is only by the cultivation of the land in Ireland that commerce and manufacturers can flourish there, and it is only by productive labour of this description that her people can become contented and prosperous. As was the case formerly in Scotland, by proper encouragement being given to agricultural pursuits, alone can the fisheries be rendered subservient to the wealth of Ireland. By this medium alone can the energies of her people be brought forward into complete action. Wherever industry receives due protection, cities arise from villages, and commerce increases the means for profitably employing the people, and introduces amongst them all the advantages which attend civilization. To repeal the Corn Laws entirely closes on the people of Ireland even the chance of these bright prospects being ever rendered real to them, and assuredly no benefit, which too cheap corn can confer on the manufacturers of Great Britain, can, in any way, counter-balance the fatal consequences to Ireland of any material alteration of this description occurring, by which the progress of agricultural improvements may be impeded throughout the United Kingdoms, and more particularly in that Island.

From the best information, which we can collect, the winter wheats are looking extremely favourable. The quantity of grass land thrown this season into cropping fields, is unusually extensive. Notwithstanding the mildness of the weather, the plants of wheat are by no means too far forward. They are looking however healthy, and are forming good roots in the land. In due season, therefore, they will come away from the ground with unusual strength, and, if not checked in the latter part of the spring, they must then promise a most abundant produce. Field labour for the spring crops is also making much progress, and the ground generally is even already in tolerably good order for the reception of seed grain of all descriptions. Should the spring months therefore only be usually favourable, the prospects towards the month of May must become cheering in the extreme to the agriculturist. Far be it from our intention even to insinuate, under such circumstances, what should now be the conduct of farmers, who still hold the greatest portions of the last year's crop of wheat. We shall only at present use the liberty, therefore, of reminding them, that prices now are high, and that the corn trade is much more uncertain than any other is. The value of grain depends more on public opinion than that of any other article, with which we are acquainted. Confidence frequently supports prices without any well founded cause, and we have seen a panic causing a violent depression, for which no just foundation whatever existed. The appearances in the fields at all events ought to be watched with the greatest care and anxiety, for on them mainly depends now the future value of the last crop of wheat. Importations from Foreign nations, should prices be encouraging, will also still be large, and the great additions of land, which is annually brought into cultivation in Ireland must be included in any calculations, which may be entered into respecting the probable value of all descriptions of grain during the summer months. Under these prospects little money will be invested at home in speculative pur-

chases of grain, the attention of capitalists being entirely directed at present to foreign markets. Sales, consequently, will only be effected for some time to come now for actual consumption, and the higher prices may be, the greater must be the economy used by families in purchasing the necessaries of life.

CURRENCY PER IMPERIAL MEASURE.

JAN. 28.

	Per Qr.			Per Qr.	
WHEAT, Essex & Kent . . . red . . .	63	70 74	white	72	76 80
Suffolk & Norfolk . . .	68	70 72	do.	72	74 76
Irish	60	70	do.	70	72
Old, red	78	80	do.	78	84
RYE	42	48	new	46	50
BARLEY, Grinding 40 42 Malting	43	45	Chevalier	46	—
Irish	40	42	Bere	—	38
MALT, Suffolk & Norfolk	66	70	Brown	65	70
Kingston & Ware	68	70	Chevalier	68	70
OATS, Yorkshire & Lincolnsh, feed	26	28	Potatoe	28	30
Youghall & Cork black	25	26	Cork, white	26	27
Dublin	25	27	Westport	28	—
Clonmel	28	30	Limerick	27	28
Londonderry	28	29	Sligo	25	27
Newry	30	32			
Galway	24	25			
Waterford, white	24	27	Black	26	27
Scotch Feed	28	29	Potatoe	30	32
BEANS	40	42	Small	42	45
PEAS, Grey	—	42	maple	43	44
White	46	48	boilers	52	54
SEED, Rape	32 1/2	36 1/2	Irish 25 1/2 per last		
English Red Clover, fine	64	70	80s per cwt		
White	58	68	74s		
Mustard, White, 12s 14s	14s	21s	22s per bushl.		
Tares	32	36	old 30 37 . . . new 60	—	s per qr.
FLOUR, Town-made	65	—	Suffolk . . .	56	— per sk of
Stockton & Norfolk 56	—	—	Irish 5s 58	62	280 lb
			Superfine . 60	—	

Foreign Grain and Flour in Bond.

WHEAT, Dantzic	60	70
Hamburg	60	68
BARLEY	36	32
OATS	24	— feed 20 to 21
BEANS	30	—
PEAS	24	27
FLOUR, American	40	42

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES from the by the Imp. Quarter, corresponding Gazette from the Gazette, of in the last year, Friday Friday last, Jan. 25, Jan. 26, 1838. 1839.

	s.	d.		s.	d.
WHEAT	81	4	WHEAT	54	10
BARLEY	42	4	BARLEY	28	9
OATS	26	9	OATS	19	11
RYE	52	4	RYE	30	8
BEANS	42	1	BEANS	33	4
PEAS	43	3	PEAS	32	5

IMPERIAL AVERAGES.

	Wheat.	Barley	Oats	Rye	Beans	Peas.
Weekending						
Dec. 14th	78 4	36 2	25 5 48	8 41 10	43 9	
21st	78 4	36 10	25 10 50	6 41 10	44 1	
28th	78 2	37 5	26 3 52	6 40 11	43 8	
Jan. 4th	80 2	38 3	26 10 52	0 41 11	43 11	
11th	81 6	40 4	26 8 51	11 41 8	42 5	
18th	81 4	42 4	26 9 52	4 42 1	43 3	
Aggregate Average of the six weeks which regulates the duty	79 8	38 7	26 4 51	4 41 8	43 6	
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the Mail of that day from London	1 0	4 10	7 9	1 0	8 0	5 0
Do. on grain from British possessions out of Europe	0 6	0 6	2 6	0 6	0 6	0 6
Foreign Flour, 7d. per 196lbs. British Possessions, do. 3d. per 196lbs.						

An Account of the quantity of Foreign Grain and Flour imported into the United Kingdom during the month ending the 5th Jan., 1839; the Quantity on which the Duty has been paid for Home Consumption, and the quantity remaining in Warehouse.

Foreign Grain and Flour.	Quantity imported.	Quantity entered for consumption	Quantity remaining in warehouse.
	qrs. bush.	qrs. bush.	qrs. bush.
Wheat from British Possessions	2	—	172 6
Ditto Foreign	212583 2	259480 4	6230 3
Barley, do	—	—	11409 4
Oats, do	3582 2	138 5	239668 7
Rye, do	1781	1146 7	5078 6
Peas, do	8807 4	5271 3	30317 4
Beans, do	2830 7	1065 5	13887 7
Indian Corn, do	1 3	4 3	3119 2
	cwts. qrs. lbs.	cwts. qrs. lbs.	cwts. qrs. lbs.
Flour from British Possessions	8396 2 11	5305 0 8	463 1 0
Ditto Foreign	63603 2 11	56738 0 2	2113 0 20

SEED MARKET.

JAN. 28.

There was rather a large quantity of red Cloverseed offering to-day, which met a very heavy sale at a decline of 2s. to 4s. per cwt. White was also dull, and somewhat cheaper. In other descriptions of seeds very little business was done, we shall therefore be short in our remarks. Canary was worth from 82s. to 86s. per qr. Linseed, English, none here; fine foreign, 48s. to 53s. Very little doing in Rapeseed; Coriander, 17s. to 25s., and the finest are somewhat in request. Caraways have rather improved, and prices may be noted according to quality, at 50s. to 54s. per cwt., and white Mustard little sought after at 8s. to 12s. per bl.; brown Mustard rules at 10s. to 17s. per bl.

CLOVER English, red	73 100	white	54 73	per cwt.
Dutch	—	—	—	—
German	56 93	—	54 72	—
French	—	—	—	—
American	—	—	—	—
Trefoil	—	—	16 28	—
Rapeseed, English	£34	£36 foreign	£28 £30	per last.
Linseed, English sowing	—	—	—	per qr
Baltic	—	crushing	48 50	—
Mediterr. & Odessa	—	—	50 54	—
Hempseed, small	34 36	large	38 42	—
Coriander, new	13 18	fine	—	per cwt.
Mustard, brown	13	white	—	per bushel
new	—	—	8 12	—
Turnip Seed, new Swedes 20	21	other sts.	28 36	—
Rye Grass, English	30 54	Scotch	18 42	—
Tares, Winter	6s 0d	to 6s 6d	—	—
Canary, new	80	84	—	—
Caraway	—	—	48 50	extra 53

PRICES OF HOPS.

BOROUGH, JAN. 28.

We have no alteration whatever in the Hop trade.

	£ s. d.	£ s. d.	£ s. d.
East Kent pockets	4 10 0	to 5 12 0	fine 8 8
Bags	4 4 0	—	5 5 0 do. 7 7
Mid Kent pockets	3 15 0	—	4 10 0 do. 8 8
Bags	4 0 0	—	4 10 0 do. 7 7
Weald of Kent pockets	3 10 0	—	4 10 0 do. 5 5
Sussex do	3 3 0	—	4 4 0 do. 4 10
Yearlings do	2 10 0	—	3 3 0 do. 4 4
1836 Pockets and Bags	2 2 0	—	2 10 0 do. 3 3
Old olds	1 1 0	—	1 10 0 do. 2 2

POTATO MARKET.

SOUTHWARK WATER-SIDE, JAN. 28.

We have to report an increased supply of Potatoes to the Waterside during the past week, amounting in all to 3,275 tons, being considerably more than the quantity of arrivals reported in our last; they are as follows,—from Yorkshire, 1819 tons; Scotland, 410; Devons,

364; Jersey and Guernsey, 669; Wisbeach, 220; Kent, Essex, and Suffolk, 295. The trade having been very heavy since the commencement of the present year, owing to the unusual mildness of the weather, and many of the vessels having exceeded their laying days, salesmen have been obliged to warehouse large quantities, and although prices have declined, sales are still effected with difficulty, the late extensive supply enabling the buyers to be very choice in their selection.

Per ton.	Per Ton.
York Kidneys 90s.	Jersey Whites ...—s. to 65s.
Reds .....—s. to 80s.	Wisbeach 65s.
American Natives..... —s.	Kent, Essex, and Suffolk Whites .. 60s. to 70s.
Scotch Red .....—s. to 70s.	Kent Kidneys..... —s.
Devons 75s.	Irish —s.
Jersey and Guernsey	
Blues 65s.	

WOOL MARKETS.

BRITISH.

JAN. 28.

The state of the trade remains dull, no business being transacted.

When the stock of Wool in the North shall have been consumed, a brisk demand will spring up again; and this need not be despaired of, as the manufacturers are generally busy.

But the prices that have been given lately have been too high to continue for any length of time, and the present flatness by lowering them again, will only do service to the trade.

The dealers generally are not at all alarmed, but are keeping back their Wool for better markets.

Per lb.	JANUARY 1.	FEBRUARY 1.
	s. d. s. d.	s. d. s. d.
Down Tegs.....	1 7½ to 1 8	1 8 to 1 8½
Half-bred Hogs.....	1 8 1 8½	1 8 1 8½
Ewes and Wethers.....	1 4½ 1 5½	1 4½ 1 5½
Blanket Wool.....	0 8 1 1	0 8 1 1
Flannel do.....	1 1½ 1 5½	1 1½ 1 5½
Skin Combing.....	1 2 1 4	1 2 1 4

EXETER.—With respect to this article, the dullness that so generally pervaded the market was experienced here also; the dealers were not anxious to purchase, and their offers from 11d. to 11½d. per lb. That isolated transactions for Yolk Wool on higher terms had taken place in the course of the preceding week is unquestionable, but what we have now more particularly to speak of, is the proceedings, or rather the almost entire want of such on this day, which forbids us from speaking of it otherwise than nominally. In the mean time our accounts from the manufacturing districts in the North of England, concur in representing "the price of Wool, as firm, the consumption great, and the business done in the warehouses very satisfactory." The matter remains then in the hands of the holders of Wool; it is their affair and not ours, whose only duty it is to spare no pains to obtain correct information, and let this tell how it may, fearlessly to place the statement before the public. These, however, must not forget that in all questions of this description they, likewise, have something to do, and we would again repeat, that neither in the county of Devon, any more than has been the case in other parts of the kingdom, can success be hoped for, without a decidedness of purpose and firm perseverance. In most other respects connected with this important branch of trade, things continue firm, as, if slight decline has taken place in one direction, there has been advance in another. Thus we have to quote WASHED WOOL,—Knot Wool, from 16d. to 17d.; Dorset Horn, 17d. to 18d.; and Marsh Wool, 17d. to 18d. per lb. In SORTS,—of SHORTS,—Coarse and Short Coarse, continue at from 8d. to 8½d.; Broad Head, 9d. to 9½d.; Kent Head, 10d. to 10½d.; Red, Green, and Pinions average from 10½d. to 11d.; Fine Head, is from 11½d. to 12d. per lb. In Stripe Wool, business been done on somewhat lower terms, and we have to quote Cornish Stripe, at from 15d. to 15½d.; and North Devon Stripe, 15d. to 15½d. per lb. FELL WOOLS.—These continue, Long Wool, best parcels, of fine quality, 14d. to 15d.; good lots of Skin Wool, 12½d. to 13½d.; ordinary parcels, 11d. to 11½d. per lb. Tops, have advanced to from 20½d. to 20¾d. per lb.

LIVERPOOL.

SCOTCH, Jan. 26.—There has been several buyers of Scotch wool attending the public sale this week, but we have not heard of a single sale of laid Highland wool, but as the holders are firm in price, we keep the quotations the same. White Highland none at market. Good clean cross wool is inquired for, and readily commands our highest quotations, inferior and heavy laid is quite neglected. Our remarks respecting cross wool will equally apply to Cheviots, anything really good and clean is in demand heavy, and unwashed is quite neglected.

Per Stone of 24 lbs.	s. d.	s. d.
Laid Highland Wool, from....	12 6 to 13 0	
White do. do. (scarce)....	14 9 15 0	
Laid Crossed do.	14 6 15 6	
Washed do. do.	16 0 17 0	
Laid Cheviot, do.	17 6 18 0	
Washed do. do.	22 6 24 6	
White do. do.	34 0 36 0	

FOREIGN.—There were scarcely any sales effected by private contract this week, owing to the public auction of Friday, which exhibited a numerous attendance of the trade generally. The competition for the various lots offered was spirited, as it is the opinion of most parties that the prices obtained for Australian were 1d. to 1½d. per lb. higher than those of last November sales. East India Wools were also 10 per cent. dearer. The quantity withdrawn was small; a few bales of German, for which 2s. 2d. per lb. was bid were purchased for the importer at 2s. 5d., and a lot of East India was also bought in at very full prices. Turkey, 9½d.; Australian, good combing and short clothing, 1s. to 1s. 1½d.; East India, 6d. to 11d.; Spanish, inferior, 1s. 6d. to 1s. 11d.; Spanish, R., 2s. to 2s. 2d.; washed Mogadore, 10d. to 15d. Arrivals this week, 3,932 bags; previously this year, 1,770 bags.—Total, 5,702 bags.

SCOTCH.

Per Stone of 24 lbs.	JANUARY 1.	FEBRUARY 1.
	s. d. s. d.	s. d. s. d.
Laid Highland Wool, from....	12 3 to 13 9	12 6 to 13 0
White Do. Do.....	00 0 00 0	14 9 15 0
Laid Crossed Do.....	14 6 15 0	14 6 15 6
Washed Do. Do.....	16 6 17 0	16 0 17 0
Laid Cheviots.....	17 0 18 0	17 6 18 0
Washed Do.....	22 0 24 0	22 6 24 6
White Do.....	34 0 36 0	34 0 36 0

FOREIGN.

JAN. 28.

Exceedingly few sales of foreign Wool have taken place since our last report, whilst, owing to the superabundant supply on sale, lower prices have been submitted to in some instances, to effect sales.

Electoral Saxony wool, from 4s. 6d. to 5s. 4d.; first Austrian, Bohemian, and other German wools, 3s. 6d. to 4s. 4d.; second do., 2s. 4d. to 3s. 2d.; inferior do. in locks and pieces, 2s. to 2s. 6d.; German lamb's do., 2s. 2d. to 3s. 3d.; Hungarian sheep's do., 2s. 4d. to 3s. 2d.; Leonessa sheep's do., 2s. 6d. to 3s. 2d.; Segovia do., 1s. 10d. to 3s. 2d.; Soria do., 2s. 2d. to 3s. 4d.; Caceres do., 2s. 4d. to 3s. 2d.; Spanish lamb's do., 1s. 8d. to 2s. 8d.; German and Spanish cross do., 2s. 2d. to 3s. 4d.; Portugal sheep's do., 2s. 2d. to 3s. 3d.; do. lamb's ditto, 1s. 6d. to 2s. 8d.; Australian, fine crossed do., 2s. 2d. to 3s. 7d.; do. native sheep's do., 1s. 6d. to 2s. 8d.; Van Diemen's Land, native sheep's do., 1s. to 2s. 4d.; and Cape of Good Hope do., 1s. 4d. to 3s. per lb.

Wool on which the Home Consumption Duties have been paid at London, Liverpool, Bristol, and Hull, during the last week:—

WOOL.	This Year, previous to last week.	Same time in the last Year.
Spanish, London..... lb.	50654	103729
Australian, do..... lb.	69000	62780
Other Sorts, do..... lb.	536127	560589
Liverpool..... lb.	344546	—
Bristol..... lb.	—	—
Hull..... lb.	190885	764073



THE FARMER'S MAGAZINE.

MARCH, 1839.

No. 3.—VOL. II.]

[NEW SERIES.

THE PLATE.

The three Wether Sheep, which form the subject of our first Plate, were bred by Lord Western, and exhibited in the Cattle-yard at the Christmas Show of the Smithfield Club in December last. The subjoined description, which his Lordship has kindly furnished, will be perused with interest. Lord Western, in accordance with his wonted liberal manner, puts the agricultural public in possession of all the information he can to illustrate the course he has pursued, in endeavouring to produce a “new breed” of sheep. The most minute details, calculated to be useful, are submitted.

LORD WESTERN'S NEW BREED OF SHEEP.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—In consequence of the desire which you represent to have been expressed by a number of persons, to have some account of the sheep I exhibited at Smithfield at the last show, and the portraits of which you have given in your Magazine, I will endeavour through the medium of its pages to give some information to the public on the subject. It is generally known that they are cross bred sheep, between the Merino and English Long Wool sheep of different descriptions. Before I proceed further I will remind you of their weights and ages, and I will give you an extract from a letter addressed to me by Mr. Allen of South Audley Street, the butcher who purchased them.

WEIGHTS. Shearlings.

	st.	lb.		st.	lb.
No. 1	16	7	fat	2	0
2	15	2	do.	1	6½
3	16	4	do.	2	5

OLD SERIES.]

Two Shears.

No.	st.	lb.		st.	lb.
No. 1	17	1	fat	2	3
2	17	2	do.	2	3
3	16	5	do.	3	2½

“With respect to the sheep I am happy to inform your Lordship, that they proved better than my best opinion led me to expect, in fact, I must candidly confess that I have never seen anything that could surpass them when slaughtered. I have pleasure in saying that the Duke of Bedford (whom I have not the honour to supply) sent for a haunch; the Duke of Somerset also had one, and another went into Derbyshire.”

I shall now lay before you a detailed account of a pure Merino fat wether, sold to and slaughtered by Mr. Barwell, of Witham in this county, and which I can best give you by the insertion of a letter from him to me.

“MY LORD,—Having been the purchaser of the three-year-old pure Merino wether sheep, bred and fed by your Lordship on your estate at Kelvedon, which was exhibited at the last Christmas show at Chelmsford, and for which your Lordship won a bet of 5*l.* with Mr. Hicks, of Walton, I take the liberty of laying before you, for your Lordship's information, and the information of agriculturists and graziers generally, the opinion of the judges relative thereto, also my own statement as to the weight of the carcase, fat, &c.

N

[No. 3.—VOL. X.

I am aware that the bet was made in consequence of a challenge thrown out by your Lordship to show a Merino wether at the Christmas show, against any of any other breed, on the condition only, that size should not pass for merit.

"Mr. Hicks took it up and produced a fine South Down wether, supposed to weigh 20 stone, but the judges were of opinion that the Merino was a superior handling sheep, being exceedingly good in all points, remarkably thick on the loin and back, and square at the leg, and wide at the brisket,—that the constitution of the sheep must have been remarkably good to have carried a fleece of wool weighing 32lbs., twelve inches long in the staple, and of beautiful and fine quality.

"Indeed, your Lordship, whilst you have so wonderfully improved the carcase, is considered not to have deteriorated the wool. The carcase of this sheep inside and out, was as good as I have ever had, and in point of colour the Merinos carry generally a brighter red and white than any other breed.

	st. lb.	
Weight of carcase	14 0	(8lbs. to the stone.)
Ditto fat and caul	0 12	
Ditto gut fat	0 8	

And the kidneys remarkably large.

"I have the honour to subscribe myself,
My Lord,
Your Lordship's most obedient
and very humble servant,
HENRY BARWELL."

It is very important to notice specially the wonderful proofs of constitution which this animal displayed. It is true he was high fed and housed, but to stand under such a weight of wool, and to turn out of his fleece quite fat, and at the Christmas following as fat in all his points as any sheep can well be made, is, under any circumstances very extraordinary, and well worthy of attention. I have had an opportunity of seeing and remarking these powers of constitution in the breed very often, and I did not pass them by unheeded, for I felt certain therefrom and other circumstances combined, that if the Merino sheep were cultivated as they ought to be, their value to the country would be very great—if they had been attended to as they ought to have been on their first introduction—if they had been cultivated as the Leicester and South downs have been by persons of the same ability, they would have advanced very far in the estimation of the public before now; but they fell into the hands of some persons who knew nothing of sheep management, and others who were determined to prevent their further introduction or possible success.

I believe his Majesty, George III, who was very fond of farming and one of the warmest patrons of agriculture, first introduced them: Lord Somerville, I think, followed, and a few individuals; for a short period there was a rage for them and they sold at great prices. Lord S. had a large flock, but he took the advantage of the tide in their favour to sell off everything, it soon after turned, and much money was lost; about this time the Spanish Cortes tendered a present to the King, of five hundred ewes to distribute amongst his subjects, this was done under the direction of Sir Joseph Banks, who offered me forty ewes, saying at the same time, that his Majesty had proved by experience of

twenty years, that the wool does not deteriorate in this climate, and that it remained only to ascertain how far it would be possible to make them valuable in the meat market. I reluctantly undertook to try what I could do with them, for I had a valuable, South-down flock, and the appearance of the sheep were discouraging in the highest degree; however the permission being granted to me to go down to Portsmouth forthwith, and select my number out of the whole flock, I proceeded there immediately and made the selection. When I got them home I had them carefully nursed and attended to, and soon discovered that there were, however wretched their appearance, traits of character about them, which well merited all the attention that could be bestowed upon them, though to improve them into a good mutton sheep, and preserve the fineness of the wool, would be a work of many years, and require a great degree of patience and firmness, to counteract the prejudices which I saw I should have to encounter. I have at length succeeded quite equal, if not superior, to my expectations; I have a ready market for them at the best price, and I have never yet sold a sheep to any butcher who has complained of the quality of the mutton. I do not say that they will fat quite so early, or come to the size of the improved South-down, still less to the weight of the Leicester, but they give a very handsome small carcase, and as I before observed I have invariably a ready market for them. I have indeed now but few wethers for sale, and those are of the smallest, because I keep all the finest of the males as rams to supply the colonies.

It has appeared to me from the first, that the defects in the form as well as the diminutiveness in size of these sheep, was owing chiefly to poverty and hard travelling—the narrow chest and the pot belly are evidences of poverty in youth—and to raise them into vigour of form and constitution, required nursing through several generations; but in spite of all these discouraging appearances, I saw features which I relied upon. There was a character about them, of high breeding, and high blood, which has primary merit with me, in all descriptions of animals. Their head is small and in many of them beautiful, the eyes bright and lively, and prominent, the face covered with a fine satin skin, at least so much of it as is left free from thick curling wool, and the nose a delicate flesh colour; they have a great deal of muscle in the shoulders and limbs generally, with a strong masculine neck, and are very active and courageous. All these properties are in my estimation, valuable; they encouraged me to go on, and besides suggested the idea, which I am now following up, of making through their instrumentality a distinct and valuable breed; in fact planting the Merino wool on a Leicester carcase. If the Merino sheep had been so defective an animal as the public imagine, I should never have attempted or thought of such a



task, but I have seen as I have now explained, powers in the animal which warranted, as I thought fully my undertaking, and I do not hesitate to say, as far as my experience goes, those sheep which are two parts Merino make the best carcase, the most firm and solid handlers. I decidedly think they are more hardy and will thrive on less food than any long wool sheep. It may be expected that I should give a detailed account of the principle upon which I proceed in combining the different breeds, so as to bring out the result I have in view; and I confess upon this point, it is not in my power, to lay down any distinct rules by which I can advise others who are anxious to follow in my wake; the fact is, I have myself to work out, and endeavour by degrees to determine the best course to pursue. I have introduced every species of long wool sheep into the medley, from which I hope to extract the fruit which I am aiming at.

I have taken care of course that every animal of every description which has been introduced into this collection of different breeds, has been of high quality in itself; so that from whatever parent they may take the stronger resemblance, the animal itself could not fail to be of value. It is rather curious that the offspring of these crosses which I now have, should exhibit so much of the various qualities of each of their several parents as I have found them to do. They are so much like each other, that the eye receives no offence, as it always does from any striking dissimilarity to each other in any flock. And in the sale of their wool I have never had any fleeces objected to. I am sorry to say I cannot give you distinctly the value of the wool, because I sell it in one lot with the pure Merino to Messrs. Legg of Bermondsey-street. Desirous to have no secrets from the public, I do not hesitate to tell you, that the price of the wool collectively was two shillings the pound, except the pure Gloucester and wool in grease, last year sold in the early part of the season.

I give you still further proof of my desire to afford the public every information by shewing in detail an account of my growth of wool last year.

PURE MERINO.		<i>Aver. Wt. per fleece.</i>	
<i>Fleeces.</i>		lbs.	lbs. oz. dr.
Ewes..... 315	} washed clean upon the sheep's back	1462	4 10 4
Hoggets 122		724	6 1 0
		2204 lbs.	
Ram Hoggets.. 26	} in the grease	292	11 4 0
Old Rams 6		60	10 0 0
Long wool 3		80	26 10 10
		432 lbs.	
CROSS-BRED.			
Ewes & Wethers 127	..	659	5 3 0
Do. Hoggets 83	..	459	5 8 8
		1118 lbs.	
Gloucester Ewes 42	..	288	6 13 0
Fleeces .. 724	Total weight	4042 lbs.	

I have just told you that I can lay down no principle to proceed upon in pursuing this cross breeding enterprise. I expect to work out by degrees a standard sheep, and then work the rams and ewes of that standard together, and correct them if at any

time they are getting wrong. In the other breeds such is the course the most intelligent breeders have followed, but by selection only, sometimes themselves leading them wrong; confessedly Mr. Ellman thus made his sheep at one time too fine and tender. The Leicester breeders did the same, they made the stock too fine and tender, too little bone and muscle, so that they were all fat and comparatively little lean, and that is a failing in them to a certain extent even now. Now, the merino gives them more muscle, thickens the neck, and better joins it in with the shoulders. The standard I wish to attain is just that of my shearlings, exhibited at Smithfield; they were got by a half-bred ram, Kent and merino, out of half-bred ewes. This ram I shall probably exhibit at Oxford in July. He actually carries a Merino fleece on a Leicester carcass; he is an old sheep now, I have used him three or four years,—being just the standard I am aiming at.

It does not occur to me, that I have anything further to state respecting these sheep, either the pure Merino, or the cross-bred; but I beg it to be understood, that my cross-bred flock consists of only eighty breeding ewes, from the limited progeny of which, I had to select the wethers I exhibited at the last Smithfield Show, and with these consequently, had to contend against all the most experienced breeders, selecting from all the vast extensive flocks of South Downs in the kingdom. I confess, I thought the decision of the judges against the eligibility of my sheep to enter into competition, was of very questionable propriety. The terms of the premium offered, were simply for the best short wool sheep; admitting for a moment that there might be a doubt upon the question, and which I think few will deny, the balance was certainly thrown into the least liberal scale upon the occasion. I am sorry to see the premium offered in class nine, for the sheep at the Oxford meeting, is worded exactly in the same equivocal terms as at Smithfield. It is impossible to know, especially after the Smithfield decision, how far any cross-bred sheep will be admissible. I trust some explanation will be given in due time, as it is really necessary, that whatever are the intentions of the society, they should be distinctly known.

Seeing an invitation at the close of the table of premiums, to enter into sweepstakes, I engage to enter for the best shearling short wool ram, presuming that my cross-bred sheep are admissible; and I am ready also, to enter into sweepstakes for the best Devon bull, and the best boar.—I am, sir, your obedient, humble servant,

WESTERN.

Felix Hall, Feb. 20.

DESCRIPTION OF A MACHINE FOR MAKING DRAIN-TILES.

INVENTED BY THE RIGHT HON. THE MARQUIS OF
TWEEDDALE.

[We now only give a description of the machine for making drain-tiles, in our next number we shall lay before our readers a full description of the mode of making drains and laying tiles, with a detailed account of the expence, and authenticated

statements of the increased produce and improved value of land after it had been drained.—Ed. F. M.]

The machine which we have now to describe is one of high importance, not only as a novel and ingenious invention, but coming, as it does, to aid the agriculturist in a most important branch of the preparatory steps of his labours, and that too at the time when that branch has acquired a degree of importance hitherto unappreciated, a tile-making machine of such commanding powers as this seems to possess, is indeed a boon to this agricultural country; and when its powers of extending the most approved system of draining have been fully developed, it will be a powerful engine in extending the productiveness of the soil. It is at all times a pleasure to admire the inventions of the ingenious; it is more so when such inventions are devoted with success to general improvement; and still more so, when to all these are added the circumstances of a man holding a high position in society, who, after having devoted a great portion of his life to the service of his country in arms, and when it became no longer necessary to wield those arms, has realised the beautiful metaphor, and beaten his sword into a ploughshare; such may literally be said of the noble personage of whose invention we have to speak.

The tile-making machine of the Marquis of Tweeddale, as we have reason to know, has been the result of much patient investigation, and frequent experiment. These have at last been crowned with success; and the fruit of his labours has been effectually secured to the inventor by letters-patent. The machine was first exhibited in public at the Highland and Agricultural Society's Show, held at Perth in October 1836, when a working model was exhibited, which excited intense interest. Since then, the details have been still farther perfected, and the machines are now at work at Yester, the residence of the noble inventor, and at other tile-works.

In order to convey some ideas of the machinery, and the principles on which it operates in the formation of drain-tiles, the following description, of the plate is submitted:—The letter *a* points out the framing of cast-iron, supported on the truck-wheels *b*, upon which the whole machine can be moved in one direction; *c* and *d* are spindles upon which cylinders of cast-iron for compressing the clay to the proper breadth and thickness, and are turned in contrary directions by means of the toothed wheels *e* and *B*, of equal diameters, which receive their motion through the pinion *g*. The upper cylinder has a provision to slide to a small extent from the other, whereby they can be set to any thickness of tile. The clay, which is previously prepared in the usual mode, is introduced by the feeding hopper, consisting of four or more rollers, turning on pivots, and around them is led the endless web, *i*, of moleskin or other suitable substance, to convey the clay to the cylinders. To prevent adhesion of the clay to the cylinders, an endless web of like materials with that of the hopper, passes round the cylinders, and is distended over small rollers *j j*, adjustable by screws for the purpose of keeping the distention perfect. The web of clay formed by passing the mass between the cylinders above described, has its edges squared off as it passes along by means of two vertical cutting wires hung before the two small rollers *j j*. After passing these cutting wires, the clay is received on another endless web, *m*, distended over the pulleys

k and *l*; these being rounded on their periphery, and then through the two inclined rollers, give to the web of clay a degree of curvature approaching to that of a drain-tile; it is next passed between the first forming roller *m*, where it is prepared to take the true shape. These last rollers revolve only from their contact with the clay web, now shaping into a continuous tile. In this state it is received upon the narrow endless belts, by which the clay is drawn through, shaping and finishing on *q q q*.

The motion of the pulleys upon which the endless web *m* works is given by the pinion *r* working into the wheel *s*, fixed upon the same spindle as *k*, the pinion *k* is worked by the wheel *e*.

The web of clay having passed the shaping irons *q q q*, having acquired the desired shape, is cut off to the required lengths by the apparatus *T*, having a wire stretched tightly at the end. The lever *w* is lifted once in every revolution of the spindle, upon which is fixed a lifting finger *y* on the spindle *x*, is worked by means of an endless chain working over a toothed wheel fixed upon the back of the spindle *g*, and passes over the wheel upon the spindle *x*; the pinion *g* has three or more of the teeth omitted, to stop the roller during the time of cutting of *t*, the tile, to allow the lever *w* and rod, *T*, to fall again to its place. The whole machine is put in motion by the band wheel *h*.

The tile, after being cut off, is received on another pair of endless leathern belts, which pass round other pulleys, and is distended over another pulley at the extremity of the alley of the drying-shed, and from which the assistants remove them on a tile-horse to the shelves. The capabilities of the machine are not, however, limited to these processes, for the inventor is at present completing an extension of its powers, whereby the tiles will be laid upon the shelves of the drying-shed by the machinery alone.

By means of a railroad extending the whole breadth of the sheds, the machine can be moved on the truck-wheels *b*, so as to be placed in the opening of each successive alley of the sheds in rotation, as they are filled with tiles. The main or first mover shaft also extends over a like breadth, and having a chain-wheel fixed opposite to each alley, it is only requisite to move the chain along with the machine.

Having thus described the process of making tiles by the machine, it is unnecessary to go into the details of making soles. Suffice it to say, that by a very slight change the purpose is effected, while by other equally slight changes any form of drain-tile can be made.

By further slight modifications also, the machine is equally well adapted to the making of brick. The patent also embraces the making of plain and pan roofing tiles, all of which are produced of a very superior quality by the machinery.

In reference to the comparative expense of making drain-tiles by hand labour and by this machine, it may be stated, that a machine requiring equal to the power of one horse, and with the assistance of one man and two boys, one of these to feed in the clay and two to remove the tiles to the shelves, will make 12,000 tiles in a day of ten hours, it being understood that the clay is previously prepared and milled, as in the common way, when three or even four men can only produce 1,500 tiles in the same time.

ON THE SELECTION OF GRAIN SEEDS, ROOTS, &c.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—In our last, we alluded to the bean culture in this country having been very much neglected of late years, for while formerly it entered into the rotation of cropping in almost every district, yet in many of them, it is now seldom had recourse to, and in others has been totally abandoned. The dislike manifested by Scotch agriculturists against bean cultivation, may have proceeded from various causes, but their principal reason for neglecting this branch of husbandry, is occasioned by the uncertainty and unprofitableness which generally attend this crop in this northern climate. This circumstance, is, no doubt, of itself, sufficient to render its cultivation limited, but we must also take into consideration the value of this crop as an intermediate one between the cereal grasses, and as a preparative for Wheat or Barley, especially to those farmers who follow a certain system of rotation, and are therefore compelled to have often recourse to turnips and red clover, both of which crops, however valuable in themselves, in comparison with beans, yet when too often repeated on the same ground, are attended with numerous failures. The fact adverted to, is one which experience has so well established in regard to red clover, so much so, that scarcely any description of soil will continue to produce any thing like a remunerating crop if repeated oftener than once in every six or seven years, and in this case, a bean crop must prove of great advantage to those lands termed *clover sick*, by extending the distance between the different sowings. It is however not improbable, but that some antidote in the shape of manure, may yet be discovered, which will render this distance betwixt the clover crops unnecessary; but in the meantime it would be well to turn our attention to the selection and purification of the bean, so as to procure varieties of prolific habits, having a tendency to early maturity, suitable to our different soils and climates. That this would not be a work of great difficulty, though requiring time, attention, and perseverance, we have every reason to believe, more especially when we consider the ameliorations which have been effected by horticulturists in the garden pea, by selection and cultivation alone.

The susceptibility of improvement of this plant is very great, and has been well exemplified in the numerous varieties which are supposed to have been derived from one origin. The prolificness of some of these varieties when judiciously cultivated, is truly astonishing, so much so indeed, as to make us doubtful whether the subject has ever received the consideration of the agriculturists at all, more especially when we consider the great disparity which exists between the field and garden sorts, not only in the limited number from which the agriculturist has it in his power to make his selection, in comparison to the horticulturist, but also in the immense difference which is shown in their produce and value.

Many instances might be deduced, to show the perfection, and almost unlimited extent to which the cultivation of the bean might be carried by judicious management, but in no other way is it more apparent than by comparing the great number of white blossomed, or garden peas, with that

of the purple flowered or field sorts; while the farmer may be said to have only his three varieties of peas, the Grey, Partridge and Hastings, the gardener has at his command at least one hundred varieties. Therefore, whatever necessity may exist, in respect to more attention being bestowed upon the selection and purification of the bean, it is no less necessary in that of the field pea; nor is there any obstacle to the successful cultivation of the pea by agriculturists, provided attention was directed to the amelioration and improvement of the more valuable sorts, for almost every kind of soil will answer for one or other of the varieties, if it is possessed of a medium degree of fertility.

With regard to the kidney bean, very little is known of it in this country; but that some varieties might prove a valuable acquisition to certain districts, may be seen from the following extract from "Lawson's Manual of Agriculture," wherein a detail of thirty-five varieties is given of this plant. "As a farinaceous seed for the food of man, the kidney bean is considered by the French, as being far superior to any other legume, and next, if not of equal importance with wheat. In this country however, notwithstanding that many of the earlier varieties might be grown to advantage on light early soils, their culture has hitherto been scarcely extended beyond the gardens of the opulent. In France, and other countries of Europe, as also in the Canadas, and United States of America, and elsewhere, kidney beans are not only used in a green state to a much greater extent than in this country, but are cultivated in the fields, and by every cottager who possesses a piece of garden ground, for their ripe seeds of which they make various kinds of dishes, and consider them of as much importance in their domestic economy as the cottagers in this country do potatoes. Unlike the common bean, the kidney bean does best in a light, sharp, dry soil of medium fertility, and the produce per acre, even of some of the dwarf varieties, is often more than double that of any other cultivated legume." The light dun or straw coloured, and the dark dun or liver coloured kidney bean, are the two sorts best known amongst the cultivators in this country; they are early, very hardy and prolific, but generally the different varieties and habits of the kidney bean are but little known or understood, although we believe, by selecting and testing the different sorts, a variety might be obtained, possessed of suitable properties, and of a habit congenial to our soil and climate; at all events, many of the early and prolific sorts offer an opportunity to the British agriculturist, of adding to our leguminous tribe of plants.

The tare or lentil, is said to have been first introduced into Britain about the year 1545, but although well adapted to our climate, its cultivation has never been attended to. In France, Germany, Holland and other countries of the continent, it is grown to a considerable extent for its seeds and haulm. In this country, however, the vetch or common tare is more generally cultivated for its forage, although its seeds are sometimes ripened, and these sorts in general cultivation, are the common or summer tare, and the winter tare, which resemble one another in general appearance, but the latter variety is distinguished by being usually of smaller growth.

There are others of the leguminous tribe of plants, which are occasionally cultivated for their seeds, but we are not prepared to say that they will either prove successful or profitable; that all

such however should have a fair trial and be thoroughly tested and proved, cannot be doubted, for we have various instances of many kinds having been long neglected, but ultimately proving of the greatest advantage to the agricultural community. For example, potatoes, although brought into England about the end of the sixteenth century, were long confined to the gardens of the nobility and gentry, and in Scotland were not planted in the open fields, until the year 1792, upwards of two hundred years after their first introduction. So prejudiced indeed, were the Scottish peasantry against their admission, that they attributed the origin of every disease, no matter of what nature, to the influence of this vegetable. Turnips, also, although known in Britain before the potato, did not come into general cultivation, until long after the days of Tull, a Berkshire agriculturist, who introduced the system of drill husbandry, in the year 1701. He obtained very few followers for more than thirty years, and Scotland was the first to reduce his system to practice. In 1760, it was there in pretty general adoption. Hence it was introduced into Northumberland in 1780, and it has since slowly found its way into the more southern parts of the island. Such has been the introduction of two of the most valuable roots that are now in cultivation, and from the great length of time they have been cultivated, we might be led to believe that their habits and tendencies would have, long before now, been thoroughly investigated, and a complete knowledge of their various qualities obtained, and widely disseminated. But such is not the fact, for although we readily admit that many improvements have been introduced into the culture of these roots since that period, still these have not been carried to their full extent, or to that perfection of which they are susceptible. It may indeed be said, that the introduction of potatoes and turnips took place when education was at a very low ebb, the supineness of our agriculturists at its height, and before agricultural associations were in existence, and therefore that any deductions drawn from this subject, are inapplicable now. But we shall shortly make it appear more than probable, that even with all the science and enterprize of modern times, there is yet a wide field of discovery lying before us, and which hitherto has been almost wholly neglected. We allude more particularly to the classification and purification of seeds. Individuals, no doubt, have at different times directed their attention to this subject, but their labours instead of remedying the existing defects, have only tended to shew the almost unlimited extent to which improvement in this department might be carried. They have failed, not from the unfruitfulness of the subject, but from the inadequacy of individual exertion for the task, and their failure is a powerful practical argument in favour of a combined and collected effort for the full development of the latent, and hitherto dormant susceptibilities of the vegetable kingdom.

The grand and distinguishing characteristic of plants over inorganic matter—that which characterizes their latent powers and living functions, is their susceptibility of improvement; animals have it to a certain degree but not nearly to such an extent as plants, for the productive faculty of the former cannot be increased like that of the latter. As is well remarked by Mr. Sharon Turner, most agreeable and surprising transformations have arisen from this property. The rose is the product of cultiva-

tion; the original plant from which all our beautiful varieties have proceeded is considered by botanists to have been the common wild briar. Our plums are cultivated descendants of the sloe; the peach and nectarine of the common almond tree; filberts are the improvements of the wild hazel; the delicious apples whose species may now be reckoned by hundreds, are the cultivated successors of the small austere crabs and wildings, which swine will scarcely eat; the original pear is a petty fruit, as hard and crude as the former; our cauliflowers, cabbages, and other domestic vegetables, may be regarded as almost artificial products, so much has human skill had to do in their production.

If then so great a susceptibility of improvement exists in the productions of horticulture, it becomes a question of great interest and momentous importance to ascertain whether or not the different species of grain, roots, and grasses, employed in agriculture are possessed of a like inherent susceptibility. It is a well known fact that grain, if allowed to degenerate, returns into a state very similar to that of some of our coarser grasses, which of itself is a very strong argument, as respects the point at issue. But we have still more unequivocal evidence that wheat, even in what may be denominated its present improved state when compared with the inferiority of its supposed original, is possessed of the principle of productiveness to an extent fully as great as the vegetables mentioned in the above quotation. In proof of this we would refer to the experiments instituted by Colonel Le Couteur on the different varieties of wheat as fully detailed by him in a valuable pamphlet which we have just perused, and which we would recommend to the careful consideration of every agriculturist. Colonel Le Couteur began seriously to cultivate the important plant of wheat so as to procure the several soils distinct from each other, and at the same time not the experiments made on the culture, produce, weight of the grain, and qualities of the corn, flour and straw. He has kept a most minute account of the experiments, and taken the greatest care to preserve the best sorts in their purity, and the result of his experience is, that he believes the proper mode of cultivation of wheat is yet unknown or unpractised. The Colonel, before he turned his attention to the selection and purification of wheat, considered his crops tolerably pure, yet on Professor Le Gasca, a celebrated botanist, examining them, he selected from them, twenty-three sorts of which some have since been discovered to be three weeks later in ripening than others, which circumstance accounts for the many shrivelled, ill-grown grains in a sample of wheat, arising no doubt from the unequal growth of the many varieties that link in the purest crop. The importance of ascertaining the qualities of the different varieties of wheat is well exemplified by Col. Le Couteur in respect to their relative value as to produce of straw. The quantity of straw produced from a single ear of one of his best varieties, No. 1, Jersey Danzig, was 3lb. 3oz. of wheat and 3lb. 9oz. of straw, only six ounces more straw than wheat; No. 2, "Album Densum," produced 2lb. 12oz. of wheat and eight ounces more straw than wheat; No. 5, "Coturaneum," six ounces more straw than grain; and No. 8, "Koelen," 4lbs. 4oz. of wheat and only 3lbs. 13oz. of straw. The next, No. 9, the Red Compact, produced only 2lb. 9oz. of wheat from 3lbs. 15oz. of straw, an excess of one pound six ounces of straw over the grain in this last, whereas the former, No. 8, a most excellent and superior variety, there was an excess in grain of seven ounces over the straw. Col. Le Couteur justly observes, that by a proper

system of culture, it must appear obvious from these facts that wheat should be brought to such perfection, as to produce more grain than straw; Nos. 8, 10 and 13, varieties selected and tested by actual practice, having done so. Now by reference to the article "British husbandry" chap.—page 154 of that excellent work, the farmer's series of useful knowledge, we find it stated that "the straw is generally reckoned to be about double the weight of the grain." We believe this may be perfectly correct as far as regards ordinary husbandry, yet if the results obtained by Col. Le Couteur's experiments are of any value, we must conclude that the proper culture of wheat if known is unpractised.

These experiments however were not confined to the weight or productiveness of the different varieties of wheat, on the contrary the Colonel continued his researches from the straw and grain, on to the meal itself, in order to be fully satisfied which of the sorts under experiment contained the greatest proportion of meal or flour, and the result nearly proved that the most productive sort in grain was also the most farinaceous. A circumstance of a very important nature was elucidated in the progress of these experiments and proves the comparative advantages to be derived from actual practice, skill, and observation, to that of science alone, for the purpose of testing and proving the merits of the different varieties of grain. Professor Le Gasca with all his experience and botanical research, was impressed with the notion, that a variety of No. 14 was one of the most productive, while it was proved by actual experiment to be the most inferior of the fourteen sorts tested, evincing the positive necessity of comparative experiments to ascertain the relative produce of wheat, which the theory alone, even of the learned Professor, could never have discovered, he merely having judged from the external appearance of the wheat, its squareness and compact form; than which, nothing could have proved more deceptive.

We have frequently in the course of these letters inculcated the advantages of a change of seed grain, and the adaptation of certain districts for producing the different varieties in greater perfection, than that of others, and we are glad to observe, that Col. Le Couteur arrives at the same conclusion. It indeed must inevitably stand to reason, that the fine white wheat which is grown on a rich fertile loam suitably retentive of moisture, can never be the proper sort to be sown on a poor black soil, such as Bagshot Heath, which of itself is incapable of retaining or attracting moisture. But it will not be denied that if a red or coarse variety, equally productive as to quantity, though perhaps less farinaceous, could be grown on such a soil, it would be an end greatly to be desired, and of much national importance. An observation made by Col. Le Couteur leads him to believe that such will be the result. In a piece of land which had been ill prepared, and was poor and out of condition, a crop of white wheat had been sown; it scarcely grew three feet in height, but among it was a plant of fine, tall, rich brown wheat, with a large round, but rather coarse grain. It proved a highly productive variety. Had he happened to have sown the field with all such, instead of having only had twenty bushels per acre, subsequent experience has shown him that he would probably have had forty.

We would here refer to the allusion which we made in a former letter, with regard to the benefits to be derived from a change of seed wheat from England, by the Scotch farmer, and also the necessity of the English agriculturist having recourse to a

warmer climate than their own, so as to make the change beneficial. This view of the matter has also occurred to Col. Le Couteur. He observes "It is important to procure seed that may ripen a fortnight earlier, for the chances are, that such wheat will have attained its full state of maturity, and therefore not only prove the most productive in farina, but also the fittest for seed."

At page 71 of Col. Le Couteur's pamphlet is detailed an interesting experiment, in regard to the cultivation of wheat from the Cape of Good Hope. While that which was sown on flat land in November, suffered much from the cold and wet, another parcel of the very same sample sown so late as the 29th March, on a warmer slope, exposed to the rays of the sun, found a genial and somewhat similar climate to its own, and succeeded perfectly. Col. Le Couteur therefore believes that the produce of this last, sown, with judgment a little earlier, and on a warm exposition, may become a valuable importation and preserve early habits for more northern climates. In fact, the great first principle which Col. Le Couteur advocates, is a judicious change of seed, and the proper adaptation of varieties of wheat to the various soils and climates, since it is the suitability of each sort to each soil, that will enable the farmer to augment his produce. If this end can be obtained, the productiveness of the soil will be enormously increased, in as much as many unproductive lands may be made to grow wheat suited to them, which under present circumstances is not attainable. This view of the matter will not only apply to wheat, but is equally applicable to all the cereal tribe. Col. Le Couteur observes, however, that it is only by slow approaches a perfect knowledge of agricultural experiments can be obtained, and that nearly a whole twelvemonth must elapse, before the seed which has been put into the ground, can be convertible into bread, the only valuable proof of the experiment.

The length of time, therefore, necessary to ascertain the perfect result of experiments, renders the prosecution of them by single individuals very expensive, laying aside altogether the uncertainty arising from occasional absence, and the sacrifice which the individual experimenter has to make in his time. Therefore how useful soever these isolated experiments may prove they could not be compared with the utility of a national establishment, founded for the purpose of quickly ascertaining such important facts, where the results of many years of application by one person may be attained in one or two seasons.

In Colonel Le Couteur's observations on the selection of seed grain, he remarks—"It has frequently puzzled me much to imagine, upon what principle some writers have recommended for seed a sort of inferior grain, the refuse of a crop, after all has been sent to the market. How a principle so entirely contrary to the whole economy of nature could for a moment obtain it is difficult to conceive. For even from the finest of seed, after five years of experiments, I am persuaded that for a crop one-tenth of the best grain perishes, or is destroyed by birds, mice or insects; but from some sorts which looked sickly, and were purposely sown singly, grain by grain, in 1833, I found that a liver-coloured variety which, from the appearance of the ear, promised to be highly productive, though the grains were ill grown, thirty-three grains out of seventy-two died, which induced me to discard it as being too delicate, its grains being poor and lean, though grown on a rich and well prepared soil. Another variety also from

poor ill-fed wheat, lost forty-nine grains out of sixty-two. A sample of golden-drop, which I got at Mark-lane, tolerably well grown, had seven varieties in a handful, and thirty-four of these died out of seventy-two grains. Whereas from other healthy plump grains of several varieties, only nine, ten and twelve died out of seventy-two grains of each variety. In 1834, the "Belle Vue Talavera" was so well grown and plump, that of three rows of seventy-two grains each not one died; of No. 1. Danzig, only three to four in three rows of the same number; and of No. 2. "Album Densum," only eight from the same number died. From one hundred and forty-four grains of a new white Spring Wheat, a very rare, hardy and promising variety, only ten died.

My general observations lead me to believe that when wheat appears to grow lean and poor looking it should be discarded from the locality, after a fair trial—say after the third year, as the second only might be the result of climate, or the want of being naturalized to the soil. The first trial should be made from seed of the best quality; if this fails after the third year, it is evidently unsuited to the soil and climate, and a new sort should be introduced. It must be obvious that lean and shrivelled wheat is not so likely to nourish the young plant just starting from its embryo state into life, with a mere miserable skin of a parent to live upon, as the fine rich nutriment to be met with in a plump, round, farinaceous grain, full of meal."

The nice discrimination and care requisite to mature a pure and distinct variety of grain, is well exemplified in Colonel Le Couteur's own practice, for in the progress of nibbing out the grains of four ears of wheat which were selected to him by Professor Le Gasca, he remarked a great discrepancy in the grains of each ear, they were not even of the same colour, and differed greatly as to form, some being round, some oval and peaked, some plump but very small, some more elongated, some with the skin or bran much thicker than others; there were also many with liver-coloured yellow, and dark grains among the white. Colonel Le Couteur therefore recommends the selection of a single grain of a pure and known variety, for the purpose of procuring a sort with a distinct character and of prolific habits; but this subject is so nice, and admits of so many distinctions, that to arrive at this he believes it may be necessary to destroy every female blossom, excepting one, on the plant, which may be selected for impregnation or future experiment; and there can be no doubt that, with due attention, the practice can be established as satisfactorily, as the success that has been met with by those who have attended to the intercrossing of geraniums, now grown of all shades and colours, almost at will. Indeed, the care which Colonel Le Couteur took in making his selections, and the great number of sorts he found of all shades and colours, forming varieties and sub-varieties, as they were termed by Professor Le Gasca, confirmed him in the opinion that the only chance of having pure sorts was to raise them from single grains or single ears. In reference to this matter, Colonel Le Couteur observes—"It is but fair to add, that even the pains I took in making these first selections amply rewarded my labours, as the produce of my crops was increased from an average of about twenty-three or twenty-five bushels per acre to about thirty-four; and since I have raised wheat from single ears or carefully selected sorts, I have

increased my crops to between forty and fifty bushels the acre. Hence I have no doubt, that with extreme care in obtaining the best and most suitable sorts of wheat, that land, in high tilth, with fine cultivation may be made to produce sixty or seventy bushels per acre." Colonel Le Couteur further remarks, that "much has been judiciously written on the growth and cultivation of wheat, which has tended to a material improvement in those farms where care has been taken, perceptible even to superficial observers; but no writer has yet called the attention of the agricultural world to the cultivation of pure sorts, originating from one single grain. It is contended that this has been the root of all the evil; many have attempted to begin well, but few, if any, have thought of commencing from the original, and persevering and keeping it pure. This idea struck the author so powerfully on the first conversation which he had with the Professor Le Gasca, that it has never quitted him. His project was considered visionary and unattainable. Old farmers said, that as no farmer in the world had ever thought of separating and classing wheat it could not be done; it was impossible to get a pure crop! The bees would mix the farina, mice would mix the grain, birds would do the same; if it had been feasible, it would have been tried before. Corn-factors assured him, that the climate of England was not calculated for the growth of such fine skinned wheat as that of Danzig, Volhynia, and Sandomir. Professor Le Gasca alone perceived and approved of the author's project.

The learned Professor had been theoretically employed in the classification and scientific examination of wheat as a plant, in the research and consideration of all its varieties; but it had escaped him to consider it in its properties, with relation to the good of man. This practical view the author took of it, and he determined to attempt to discover which were the most farinaceous and productive varieties, by comparing their character and produce one with another.

From the foregoing observations we will arrive at the following conclusion, viz.—That the wheat in this country is much mixed, and therefore is rendered less productive than a variety or varieties with distinct characters, distinguished for their suitability for our different soils and climates, and the practicability of obtaining such varieties is clearly demonstrated in the practice of Colonel Le Couteur. Also, that when we procure a pure and suitable variety of seed wheat, it is absolutely necessary to guard against the admixture, and that this can only be accomplished by unremitting care and attention.

It will farther be observed, that it is not enough to select varieties that may appear valuable in the eye of the botanist, but that they must be tested and proved by actual experiment before their merits and qualities can be properly appreciated or understood, and that in fact the want of these practical tests have hitherto proved the root of all the evil.

Lastly, although Colonel Le Couteur has directed his experiments solely to wheat, yet sufficient is known to render it probable that the different seeds and roots at present in cultivation in this country would be susceptible of a like improvement, if subjected to a similar process and the test of experiment.

"A SCOTCH FARMER."

(To be continued.)

ON THE RURAL MANAGEMENT OF THE FORFARSHIRE PART OF THE WESTERN DISTRICT OF STRATHMORE.

By Mr. ROBERT PILLANS NEWTON, HALLYBURTON.

[A prize of Ten Sovereigns was awarded to the writer of this Essay by the Highland Agricultural Society.]

The Vale of Strathmore is proverbial for its beauty and magnificence of scenery. It runs between the two great chains of the Southern Grampians and the Sidlaw Hills; Strathmore, strictly so called, being understood in general to compose the flat of country extending from about Montrose to Perth, although some are not disposed to yield to it so great a compass.

The soil of this district abounds much in blackish loam on a substratum of rock, producing turnip and potato crops of the finest quality, and not easy to be surpassed in the production of barley and oats, especially the former. It is a soil much of which may be said in technical language to be *sharp*, repaying well for liberal manuring with judicious management.

Although the mode followed in cropping the land, necessarily varies with circumstances,—opinion of the farmer, &c., yet the five-shift rotation is that most commonly adopted, viz., oats, green crop, barley or wheat, grass two years. We have sometimes thought that in the rotation of crops there is in some soils often a great propensity among farmers to over-ploughing the land.

If on many farms where a five-shift rotation is adopted, a six-shift were followed instead: that is, three years under crop and three years in grass,—or, in professional language, *three out and three in*,—land could be made more profitable, and in the end frequently to produce as great a proportion of straw and grain as with the five-shift management.

In the first place, the items of expense on an arable farm are more numerous than may generally be taken into account. Servants' wages, the keep of horses, tear and wear of carts, ploughs, harrows, harness, &c., the cutting up of roads and fields in driving home the produce of them, and otherwise; and, though last not least, the decreased powers of growth and vegetation which continued ploughing must effect, are all to be considered in the cultivation of arable land. In a district like this, so well adapted, from various causes, for the feeding and rearing of stock, and particularly in a district where the management of live stock is, generally speaking, so well understood, cattle and sheep husbandry might, with advantage, be carried in many cases to a greater extent than even it is at present.

By following the six-shift course of half in crop and half in grass, farmers, while in all probability they would clear more profit by the additional live stock which it would enable them to maintain, would as before hinted, be at last no losers even in the quantity of grain produced as compared with what the farm yielded under a five-shift course of management; because the superior crops which the land ought to yield under the five-shift rotation, should prove as abundant as those produced under the more extensive cropping involved in the five-shift management. Much less manual as well as horse labour would be re-

quired, and the farm thus carried on at a considerably reduced expenditure.

Wheat has not been very extensively raised in this district of Strathmore of late years, though formerly attempts were made to grow it on a much more enlarged scale than is now practised. The inroads of the wheat fly are very much blamed for the unproductiveness of this crop, but the real truth is that our land is scarcely strong enough for wheat, though of course to this we find exceptions.

The breadth of wheat sown in the district this season (1837) has been vastly less than for many years past; but the cause of this did not proceed so much from any apprehensions of failure by the ravages of grub already noticed, as from total impossibility of getting the land prepared and sown in time, on account of the extreme inclemency of the weather at the proper season. But indeed the comparative value of wheat and barley in the market has of late been so very different from what we have been used to consider their relative price, that we should imagine that those who may have been disappointed as to any part of their wheat crop this year need not consider it as a subject of great regret.

Barley may be said to be the crop most congenial to the soil of this district, and Strathmore barley is rapidly becoming almost proverbial in the country. Until of late years English barley was in general sown, which for malting and weight is undeniably far superior to the Scotch barley. Within the few last years, however, Scotch barley has been a good deal sown, and the weights produced from it are sometimes very considerable. The Scotch is found to ripen considerably earlier than the English barley, and a greater return of straw is produced. On good barley land there are instances where the Scotch kind has been sold to *brewers*, to whom it has given great satisfaction. Chevalier barley is also now becoming a favourite variety in this district, although only introduced within the few last years from England. The ears very much resemble those of the common English barley, but contain on an average two or four more grains in each; the grain being rounder and more plump. It has the disadvantage, however, of being eight or ten days later in ripening than the common barley, and is therefore not so well adapted for inferior and late soils.

Oats are also extensively and very successfully cultivated in this district. The potato oat is the sort most generally sown, but in many farms common oats are cultivated to some extent. On poor soils the common oats are perhaps most to be recommended, and indeed there are many soils in this district on which the potato variety would scarcely grow. The Hopetoun oat has also been very much sown for two or three years past. No doubt the straw is both longer and stronger than that of the potato oat, and the grain is found to ripen a few days earlier; but when we consider that this oat is much more liable to smut than the other, and not so well coloured, it is not much to be wondered at if the more common varieties shall still be more generally liked.

Before quitting the subject of grain crops a mode of paying the reapers of the corn crops in this district, more commonly practised here than in any other, deserve our notice. We allude to that of paying shearers by the threave. A threave of oats and barley is reckoned two stooks of twelve sheaves each, or twenty-four sheaves, and a

threave of wheat is reckoned two stooks of fourteen sheaves each, or twenty-eight sheaves. For the barley and oats the common allowance is 3d. per threave, and for wheat 4d. Each sheaf of oats and barley must be 32 inches, and that of the wheat 36 inches in circumference at or about the corn-band of the sheaf, and the grieve or overseer generally carries a gauge with him, by which when necessary he is enabled to check the girth of each sheaf.

This method of paying the reapers is attended with considerable advantages, if a steady and attentive overseer is constantly in attendance upon them. It is evident that a better day's work will be obtained than on the day's-wages system, because the more the reapers cut down the more they will earn. Again, in a district like this, where harvest labourers are not numerous in proportion to the quantity required, and where consequently a farmer has not the advantage of the choice of hands which *ports* (hiring markets) of shearers afford to farmers in the Lothians, it is much fairer to both parties that the reaper should be paid according to the extent of work performed. This system too, affords a chance to man, woman, and child, to earn a little in harvest, and it is the grieve's business to see that the reaping is properly executed. No victuals are furnished by the employer as in the Lothians, so that taking everything into account, a saving of expense is effected by the threaving method of cutting the crop. The stubble will be found in general to be closer cut, because the more closely grain crops are cut to the ground the sooner will the sheaf be made up, and therefore of course the more the reaper will earn. It may be interesting to observe, that the difference of prices between shearing by day's-wages, and according to the threaving mode is not great, although for the reasons already stated the latter is here almost universally preferred. It is calculated that on a fair average of harvest-wages, the crop should be cut at about 8s. per imperial acre by day's wages. Now a tolerable shearer ought to cut down about eight threaves of oats and barley per day, which at 3d. per threave is 2s.; and as thirty-two threaves may be said in round numbers to be a fair average quantity of these kinds of grain per imperial acre, this would just bring it exactly to 8s. per imperial acre. Again, six threaves of wheat is reckoned a fair average shear per day, which at 4d. per threave, is just 2s., and as twenty-five threaves of wheat are reckoned a fair average crop per acre, this would bring the expenses of shearing the wheat to about 8s. 4d. per imperial acre. Of course bandsters' wages are not included in the above calculations.

With regard to the green crops most cultivated in this district, potatoes and turnips may be said to take almost exclusive precedence. Both, in a feeding country like this, are most important crops, and there is perhaps no agricultural district where the husbandry of both is better understood. In the potato crop, the variety called the Perthshire-red is still decidedly the favourite for field culture, although many of the other varieties are to be met with, sometimes over a considerable extent. To dwell upon these, in speaking of a plant of which there are now 146 known and established varieties, would be alike tedious and uninteresting.

Of the varieties of turnips sown, the Yellows and Swedes (*Rutabaga*) are considered the best. Dale's Hybrid was very much in vogue two or three years ago, but its fame seems by no means to be on the increase.

In the turnip husbandry it is a practice very commonly adopted here to eat one half of the field with sheep on the ground,—and the effects of such management never fail to shew themselves most materially on the succeeding crops. The turnips when intended to be consumed on the ground, are manured when sown with generally from 12 to 16 bushels of bone-dust per imperial acre. For the introduction of this very valuable manure the district is indebted to Mr. Watson at Keillor, and for which a very handsome public acknowledgment was made to him soon after.

The bone-dust and *sheeping* together form a most ample and rich preparation for the barley crop, which generally follows the turnips. The land ought to be *ribbed* immediately upon the removal of the sheep from the ground, which is the most effectual method of amalgamating the dung and urine while yet in a fresh state, with the soil. The land is ploughed for the seed-furrow afterwards.

The practice of eating turnips on the ground in this way cannot be sufficiently urged upon farmers, particularly upon lightish dry land. The ground receives a rich and wholesome manure, and the compressure of the soil by the sheep's treading is an additional advantage not to be lost sight of. Bone-dust manure, too, previously sown with the turnips, is more lasting in its effects than many suppose. In support of this we have the testimony of Sir Humphrey Davy, who says that the earthy matter in bones prevents the too rapid decomposition of the animal matter.

Considering it quite unnecessary to dwell longer on the varieties of crops cultivated, there being little that is new which can be said in regard to them, we shall now give some account of the live-stock management of the district, a department of rural business at once the most interesting, and properly conducted, often not the least profitable.

There is no branch of their profession to which Strathmore farmers in general pay so much attention as to that of live-stock management. The fact is that there are inducements and facilities from the local circumstances of the district, which render it matter of no surprise that the management of live-stock should be so well understood. The distance from large towns renders the disposal of green food, otherwise than by feeding at home, quite out of the question. The increased facilities for the disposal of stock, too, may be mentioned as an additional and not unimportant inducement in this department. Besides numerous markets, most of them of considerable extent, the steamers from Dundee to London carry both cattle and sheep in great numbers; and so easy has the intercourse with the London markets for the sale of stock become, that what is shipped on Wednesday from Dundee is sold in the London market on the Monday following, and a remittance of the proceeds is obtained on the Thursday. In the Glasgow market also, cattle and sheep from the district meet a ready sale.

Pure breeds of cattle of any kind are only to be met with in the hands of two or three individuals in the district; but as the Angus polled cattle are the peculiar breed of this county, it may be proper to give some account of them.

The Angus polled, or as they are called by the country people, *dodded* cattle, are well known to the Scotch dealers and to the country generally. They have long been the breed peculiar to the county of Forfar, though some remains of the original horned Angus breed are still occasionally to be met with.

The prevailing colour of the horned Angus cattle was black, and they had a considerable resemblance to the present Aberdeenshire breed. They are, however, shorter in the leg, thicker in the shoulder, rounder in the carcass, and fully straighter in the back than the Aberdeenshires, and they are acknowledged to carry their head better. They are supposed to have originated in a cross between the Highland and Low country or doddied breed. But to return to the *doddies*.

The origin of the Angus doddies is very remote, and indeed can scarcely now be traced. They were rendered attractive to agriculturists at first from their extreme docility and quietness, a quality more or less peculiar to polled cattle in general, and they were found advantageous also on account of the few accidents sustained from injury to each other, either in the straw-yard or the stall, as compared with the horned kind. The Angus doddies bear a very marked resemblance to the Galloway cattle, and are often mistaken for them. An experienced judge, however, discovers that the Galloways are smaller, shorter in the legs, and thicker in the shoulder than the Angus doddies. The treatment in the bringing up of the two kinds is very different. The Galloways have to endure the hardship of a moist climate, and are generally winter fed in the open field, whereas the Angus cattle are always wintered in the straw-yard, besides having the advantage of a comparatively mild and genial climate. This difference of treatment renders the Galloways more hardy looking than the Angus kind, and the latter is found to handle more kindly than the former.

The pure Angus polled cattle are generally black, and it is considered by the very few in the district who possess pure stock of this kind to any extent, so important to preserve the colour of their stock, that they do not allow an animal of any description whose colour is other than black, to be near their cows when stunted by the bull. Perhaps the largest and most successful breeder of this stock is Mr. Watson at Keillor, who gave an interesting account of his mode of management, in a letter to the Highland and Agricultural Society of Scotland, which is also important, because the system detailed in it is in many respects applicable to the successful breeding of Short-horns also. Mr. Watson states that "The cows intended for nursing, generally calve early in the season, about the month of January or February, when a strange calf is procured from some of the small tenants in the district who have dairies. This calf is suckled with the others by the same cow, and although the cow at first shows great dislike to the stranger, in a few days she receives it very quietly, care being taken that both are put to suck (one on each side) exactly at the same time, by tying the calves' bands to the stall, or the band of the cow, so as to keep each calf at its own side. They remain with the cow for fifteen or twenty minutes, by which time her milk is perfectly drawn away. As the calves advance in age, they eat hay, sliced potato, porridge, and other food they are inclined to take. By the 1st of May, or as soon as grass is ready, they are weaned and turned out from the byre, when two fresh calves are immediately put into their stalls, and receive the same treatment, excepting that they are turned out at 12 o'clock, after they have got their suck, to eat grass, and are brought into the byre again in the evening, when the cows come in to be suckled. This set is ready to be weaned by the 1st of August, and a single calf is put into

the feeding-pen, and fattened for the butcher, the season being now too late for rearing. As these are fed off, the cows are let off milk, having each suckled *five calves*. It is necessary to have a very steady and careful person to attend to the suckling, which has to be done three times a-day, viz. early in the morning before the cows are turned out to grass, at mid-day, and in the evening when the cows come into the byre for the night, and get a little cut grass, tares, or other green food. The byre is arranged so that the cows have each a stall of about four feet wide, with their heads to the wall; and on the opposite wall the calves are tied up, two in a stall exactly behind the cow, so that there is little trouble in putting them to the cow, and no chance of misplacing them. The fat calves have in some seasons, been sold at 5*l.* each, this being the scarcest time of the year for veal."

But though formerly the *Angus cattle* were chiefly reared and fed in this district, and in the county generally, they have of late years been decidedly not the *favourite* stock. The superior weight and quality obtained by the feeding of short-horns, have now rendered this description very generally preferred by the farmers of Strathmore. And certainly the make and points of the short-horns render them much preferable in general to the Angus cattle for the feeding-byre, though they require abundance of the best keep and the most careful attention at all seasons. To those who have not at their command a plentiful supply of good keep and comfortable accommodation for feeding, the more hardy Angus ought to be preferred. To those, on the other hand, who possess these advantages, the short-horns will be found the most profitable feeders. It should before have been stated, that what are talked of in general as short-horns in this district are not the pure improved Teeswater, but merely crosses (generally with the Angus) with a large dash of Teeswater blood in them. In one or two instances, however, the pure short-horns are to be met with. Mr. Hood at Hatton near Glamis, Mr. Dalgairns at Ingliston, Mr. Anderson at Newton, Mr. Nicoll, Littleton, and Mr. Campbell, Balbrogie, have all exhibited very superior specimens of the short-horned pure breed. Mr. Anderson at Newton has probably now more *pure* short-horns than any other breeder of them in the district.

Cattle for feeding are generally tied up for stall-feeding at the age of *three off*, but many even at two years. They are fed on turnips and potatoes, generally wholly on turnips at first, then turnips twice a-day and potatoes once; and as the turnips begin to get scarce twice potatoes and once turnips. Often towards the end of the season cattle are fed wholly on potatoes. Of course a bite of dry straw is constantly kept at their command. Fat cattle are generally ready for the market in March and April.

Having thus, though perhaps imperfectly, given some account of the live-stock management of the district in reference to *cattle*, we shall before concluding the subject, briefly advert to that of *sheep*.

It is now universally allowed that there is no manure which diffuses itself more equally, or which is more valuable in its effects than that produced by sheep, whether as applied on pasture land or in turnip feeding on the ground; farmers in this district are now so satisfied of this, that they almost invariably make a point of grazing their pasture land one year with sheep, and of consuming generally the one-half of the turnip crop by sheep on the

ground. It is an old remark that where you have plenty of sheep, plenty of *oats* follow.

There are comparatively few in the district who have it in their power to carry on a *breeding* stock of sheep, but there are some who do. Unless, indeed, considerable advantages of hill-pasture are possessed, a trifling stock of sheep will be found most profitable on a farm in this district. The mode of management generally adopted with a shifting stock seems to be this: a stock of ewes suited to the keep which the feeder may have for them, are bought in the autumn in middling condition, and put on turnips. They get the tup about the middle of or end of October, and the lambs are sold fat off their mothers. The ewes are then fattened off the grass, and ought to be ready for the market about the beginning of September. If the farm affords a sufficiency of keep, sometimes a stock of lambs are bought in, fed through the winter, and sold off hogs early in the grass season, after being clipt. The ewes bought in are often of the black-faced kind, and crossed with a Leicester or Cheviot tup, produce a very heavy description of lamb. Cheviot lambs are often fed and sold as hogs, but the Leicesters are not quite so generally dealt in. The Leicesters are an expensive stock at first, and they do not seem to take the market like the other kinds, at least they do not so readily yield a profit proportionate to the outlay at first and expense of feeding. The high price of wool, however, of late years, has made a considerable difference in this respect.

We shall now offer some general remarks as to the district in question.

In contemplating the circumstances of an agricultural district, there is nothing which so naturally suggests itself as the state of *its roads*, and there is no subject connected with country matters now-a-days better understood than road-making. Our turnpike roads, both in this and the sister kingdoms, are unexceptionable, thanks to the labours and discoveries of Macadam. But simple though the subject now appears to us, there are few subjects which have given rise to more discussion and difference of opinion than road-making. Farey, Walker, Telford, Stevenson, Fry, Marshall, Paterson, and Edgeworth, all maintained their separate theories on the subject, but the superiority of Macadam's system, as a whole, is now almost universally acknowledged, and not less universally adopted. Since the introduction of his system, Macadam has made a most valuable improvement of it in the reduction of the size of stones laid on the road from 6 ounces to 4 or 4½. By the latter a much more angular stone is got, the stones consolidate more effectually in the road, and thus the bad effects of rainy weather are much lessened.

But it cannot be said that the improvement of our *parish* roads in Scotland progress in anything like an equal ratio with the turnpike roads. If the present Act of Parliament relative to the statute labour is to continue in force, a better system than that generally followed with our parish roads might be adopted with advantage. In general, they are committed to the charge either of some farmer in the neighbourhood, or some common labouring man, either of whom is most probably allowed to lay out the road-money at his own discretion. In the one case, the objection is, that the farmer, whoever he may be, will be so much taken up probably with his own affairs as to be unable to bestow that attention upon the roads which their importance demands; and in the latter case, as experience in many instances has shown, the labouring man will very likely be grieve or foreman over other workmen belonging to some

proprietor in the neighbourhood, and this man attends to the repairs of the bye-roads as a secondary consideration altogether, exactly as it may suit his own convenience, without regard to time or place.

Now, to rectify both these evils, we would propose that the bye-roads should in all cases be committed to the charge of the same individual who superintends the turnpike roads of the district. The trustees will no doubt take care that this individual be thoroughly conversant with his business, and as men *must* be constantly kept on the turnpike roads, how easy would it be for the superintendent to keep an additional man or two for the parish roads also. This would be the person most likely to make the parish road-money go farthest in keeping the roads in repair; and were this system more generally adopted than it is, we have no doubt a marked change would soon be perceptible in the parish roads in Scotland. In the Carse of Gowrie the system just alluded to has been adopted with the best results.

It is much to be feared, however, that, as the law now stands, really *good* bye-roads cannot be looked for. Let Government put them in a tolerable repair by levying a small temporary tax for the purpose, and afterwards put on a small toll at reasonable distances, and then bye-roads worthy of the march of improvement in other things might be expected. The bye-roads in this district are, by care and management, gradually getting into as good order as small funds will allow.

The whole scenery around this district of country is beautiful in the extreme. The extensive plantations of Lord Wharnclyffe and Lord Douglas Hallyburton enhance the scenery not a little, and the numerous other gentlemen's seats in the district cannot but attract notice for the taste and neatness with which they are generally laid out.

But perhaps no gentleman, for a great circle round, has done nearly so much for a single estate, in proportion to its size, or in every possible way promoted a spirit of improvement in the county generally, as its present representative, Lord Douglas Gordon Hallyburton. For a period of not less than twelve years, Lord Hallyburton employed from eighty to a hundred extra labourers on *his* estate alone. His Lordship has accomplished many very arduous and extensive improvements in the way of draining, ditching, dyking, trenching, and planting, of which last, perhaps the most conspicuous and extensive, is the planting of his fine hills, forming part of the range of the Sidlaws. For an extent of more than 500 acres these hills are now covered with thriving larches, and on the east part of the property an extent of about 200 or 300 acres comes in, planted with hard wood of various kinds, much younger than the former, but mostly in a very thriving state. Through these hill plantations good carriage or cart roads are formed in every direction, which are not only valuable as affording most delightful pleasure-drives, but particularly so for the conveyance of the annual thinnings of the wood from the plantations.

There are now so many large larch plantations coming up in this country, that their proper management is a subject of some importance.

It is of the greatest consequence in the management of larch plantations of any extent, that every pains be taken to keep the trees so dispersed over the wood as that each may be duly relieved from the oppression or crowding of its neighbour. This requires the plantations to be thinned every three years at least, until the wood arrives at maturity. The way in which this is best accomplished is by hiring in for the season an extra number of men and women merely for this operation. The best season extends

from about the middle of May to about the 6th of August, because at that time the sap of the larch is in the condition best adapted for barking it. It is doubted by some whether the barking of the larch is either profitable or useful; but to those who so doubt we can confidently state that it is both profitable and useful; for it is profitable, inasmuch as it will, if properly managed, yield a return of about 20 per cent. upon the outlay; and it is useful, because it is of decided advantage to the wood to want the bark. The way in which the operation of barking the larch is carried on is this: females, in the proportion of about two-thirds of the number of males employed, are provided with small wooden broad-pointed chisels, shaped somewhat like a wedge, and an old dinner or large clasp-knife. These females and boys are stationed on the road, or part of the plantation most suitable for the after-carriage of the bark and wood, as near as circumstances may permit to where the men are thinning. Very frequently in working up the hill there is no way of getting the trees out to the road but by carrying them across men's shoulders, but where it is at all practicable it will be found to be a great saving to collect a number of trees together, hook them *en masse* in a drag-chain, and draw them out with a horse. A good steady horse soon gets accustomed to the work, and the saving of manual labour is great. The moment the trees are laid down on the road, the females and boys commence to peel the bark off them, by first taking the knife and making a cut up the middle of the tree; and then by inserting the wooden chisel, already noticed, in the slit or cut previously made with the knife, the bark comes easily from the tree in one long sheet. It will then be the peeler's business to scrape the outside of the bark-sheet carefully with the knife, so as to clear it of the mossy stuff generally more or less collected on it, and also of the corky matter which is unavailable for tanning purposes. The bark is now conveyed to as airy a place as can be found within a reasonable distance, and there hung across booms, as the labourers call them, consisting merely of the thinnings of the trees, supported by three trees set up in the form of a tripod. These booms may be placed from eight to twelve or fourteen feet apart; and where a favourable place for a depot of bark is fallen in with, they are sometimes continued to a great length.

If the weather be dry, the bark will be ready for turning in from ten days to a fortnight, and when completely aired, by being rendered as brittle as bone, it is conveyed to a house of some kind, where it is chopped into small pieces and made ready for sale and delivery to the tanner. Larch bark is chiefly used for sheep-skin tanning.

In thinning a wood, so many of the men are employed in cutting down the larches, and so many in pruning the branches from the trees before being carried out; and when the trees are to be barked, the pruner will be careful to lop the twigs close to the trunk, which will greatly facilitate the peeling of the bark.

In this district, as in most, the proper management of pasture lands is of very great importance, and there is no doubt that, on lands laid down either to permanent pasture, or for a series of years, something more might be done towards their amelioration than is generally attempted. On a property in this district, of considerable magnitude, about sixteen to twenty enclosures of pasture of various sizes are annually let for the grazing season, and in order to keep them in good heart a system of top-dressing is pursued worthy of imitation on other estates, and which may here be shortly explained.

In the numerous, extensive, and thriving young plantations on the estate in question, there is annually a very considerable quantity of grass, which, from the growth of the plantations, cannot be depastured, and which, therefore, must either be cut or allowed to lie waste. The grass in these young plantations is regularly mowed every year and made hay of, the greater portion of which, however, is necessarily very coarse, and indeed ill adapted for any other purpose than that of litter.

In almost all the grass inclosures already mentioned, substantial and commodious cattle-sheds have been erected. The pillars which support the roof are of cast-iron, and cost about 10s. each. The roof is slated in the ordinary way, and the walls of stone, placed within the pillars and under the roof, are built dry, excepting at the corners and sconceons. Two openings of six feet in width are left in the shed for the ingress and egress of the cattle.

With the coarse hay made as already described, these sheds are kept during the grazing season regularly bedded, and they prove a great acquisition to the pasture fields, since they afford shelter to the cattle in cold, rainy, or stormy weather, retreats through the night, or protection from the discomfort and annoyance to cattle of a scorching sun. At the middle and close of the season, these sheds are duly cleared out, and the manure is conveyed to some spot for a dung-hill, convenient for the field on which it may be intended to apply it. As soon after the cattle are all removed from the grass fields for the season as may be convenient, women and boys are employed to go over them and collect in heaps in the respective fields, by means of spades and wheel-barrows, the cattle and horse droppings. This is carted away to the dung-hill to be mixed with the manure from the sheds.

About the month of March, the dung-hill is carefully turned and mixed with the park dung, and any that is rank or long, well shaken out; and it is found of great advantage in preserving the essential properties of the manure, to cover up the dung-hill with a coating of good mould to the depth of about four inches. Between the months of March and August or September, a quantity of good earth is driven to the dung-hill, which there is never much difficulty in procuring, either from the scourings of ditches, foundations of houses or dykes, reducing of roads, or the like. About the month of August this earth is carefully mixed up with the dung in the proportion of three-fifths of earth to two-fifths of dung, and as soon as the field is clear, and the weather propitious for the purpose, it is applied as a top-dressing to the grass, in the proportion of 20 cart loads to the acre, each load containing about 30 bushels. This will be found not only a most effectual system of top-dressing, but as cheap a one as can well be devised, since there is no actual outlay but in manual labour. The cattle-sheds too are found to be a considerable inducement to graziers and others who rent the parks.

The flora of the district deserves a remark or two. The county of Forfar as a whole presents a diversity of surface, which renders the plants found in it of very varied description. Part of it is high, rocky, and mountainous, comprising a portion of the ranges of the Grampians on the north and north-west, and immediately to the southward of the valley of Strathmore the Sidlaw range of hills rise in many instances to a height of 800 feet above the level of the sea. These high tracts of country, and more especially the former, taken in connection with numerous peat-mosses, afford favourable localities for many of the more rare alpine and bog plants. There is also

a considerable proportion of the country low-lying, both arable and pastoral, with old plantations scattered over it here and there, in which much moist land frequently occurs. This portion of the country contains many botanical advantages, such as undulation of surface, diversity of soil and climate, together with some extent of bleak moorland. There are also many fresh-water lakes and considerable rivers, such as the Isla, North and South Esk, Tay, &c., thereby affording habitats for many of the aquatic and lacustrine families of plants. The county likewise possesses the advantage of a sea-coast thirty miles in length, on and about which are found many of the marine genera and species. Viewing, therefore, these features, we think it reasonable to presume, that, on a more careful examination of the county than has as yet been made, many discoveries may yet be made of known native plants, and probably some also quite new; and further, we cannot err far in saying that it will be found to possess as rich and varied a collection of native plants as any single division of Scotland. We may subjoin a few names of the rare plants found in this county. *Hippuris vulgaris* (mare's tail) plentiful; *Veronica Allionii* (creeping speedwell); *Utricularia intermedia* (intermediate hooded milfoil); *Eriophorum gracile* (slender mountain cotton grass); *Alopecurus alpinus* (alpine foxtail grass); *Phleum Michelii* (cat's-tail grass); *Arundo stricta* (smallest close reed); *Arundo arenaria* (sea-side reed); *Hieracloe borealis* (northern holy grass); *Poa alpina* (alpine meadow grass); *Avena planiculmus* (flat oat grass); *Hordeum maritimum* (sea-side barley); *Scabiosa columbaria* (small scabious); *Galium spurium* (smooth fruited bedstraw); *Potamogeton lanceolatum* (spear-leaved pond weed); *Radiola millegrana* (all-seed); *Myosotis rupicola* (rock scorpion grass); *Azalea procumbens* (procumbent azalea); *Lobelia dortmanna* (water gladiole); *Atropa Belladonna* (deadly nightshade); *Tulipa silvestris* (wild tulip); *Ornithogalum luteum* (yellow star of Bethlehem); *Convallaria verticillata* (whorl-leaved Solomon's seal), found by Rev. J. Barty of Bendochy. *Juncus arcticus* (hard rush); *Juncus biglumis* (two-flowered rush); *Paris quadrifolia* (herb Paris), found in the Den of Airly; *Subularia aquatica* (awl wort), found by Mr. John Lowe, gardener at Hallyburton; *Senecio cæruleus* (blue sow-thistle); *Hieracium cerinthoides* (honeywort-leaved hawkweed), and some others.

The geology of the district may merely be noticed in passing. The Sidlaw hills, which form the southern boundary, belong to the transition series, surmounted with trap. The rock through which the trap rises is the grey inferior sandstone, which, in some instances, contains vegetable impressions. The soil has not resulted from the disintegration of the adjacent rocks, but has been transported from another locality. The subsoil is a ferruginous clay. Details on this part of the subject will be found very ably laid down in Mr. Buist's late most excellent paper on the geology of Forfarshire and Perthshire.

We must not conclude these remarks without adverting for a moment to the character of the *tenantry* of this part of the country, and certainly they cannot be spoken of in terms too flattering. For industry, intelligence, and respectability, no district can boast of a more desirable class of men, and none more ready at all times to give fair weight and trial to whatever may be put forth as an improvement on the agriculture of the country.

The rents of farms in many cases here are regulated by the fiars prices of the county, and different systems on this principle are followed. The principle upon which this system proceeds, is by sup-

posing a certain price as a fair average per quarter of grain. The farm is valued first at a money-rent, and the amount, whatever it may be, is converted into grain at the price fixed. After this, the fiars regulate the rent, which is just the number of quarters of grain calculated for the capabilities of the farm multiplied by the fiars price, whatever that may be. Some fix a price beyond which the rent can never be calculated, and it may fall as low as the fiars in any year. Others again, fix a minimum, medium, and maximum. The medium is the supposed average rent of the farm. The minimum fixes the price below which the rent can never fall; and the maximum that price above which the tenant can never be charged. Land in this district may be said to average about 32s. per acre.

The *peasantry* of this district also demand our notice. They are, like the Scottish peasantry in general, a sober, hard working, quiet race. We think, however, that the system with the farm-servants here is not quite so good as in the Lothians and some other places. There each hind in general has a house and an allowance of potatoes, meal, &c. as part of his wages. But farm-servants in this quarter, unless they are married, are generally huddled together in what is called a *bothy*. Each man has his allowance of meal and milk; and brose constitutes his breakfast, dinner, and supper. It is sometimes alleged, and with some truth, that the *morals* of the farm-servants are not apt to be improved by the *bothy* system.

There is abundance of stone in the district, and the fences are in consequence generally most substantial. The farm homesteads too are remarkable for the varied accommodation which they afford, combining in an eminent degree all the conveniences necessary for the proper management of a tillage farm, with those most approved of for the purpose both of the breeder and feeder of stock.

ON THE NATURE AND PROPERTIES OF LIME.

Sir H. Davy says, that "quick lime (Hydrate of lime) in the pure state, is injurious to plants; that when mixed with moist fibrous vegetable matter, there is a strong action between the lime and the vegetable, and they form a kind of compost of which a part is usually soluble in water; but that carbonate of lime is a useful ingredient in soil, that it acts upon the decomposing vegetable and animal matter in the soil, so as to render it more fitted for the purposes of vegetation, that it prevents the too rapid decomposition of substance already dissolved, but has no tendency to form soluble matter."

Quick lime is a combination of lime with one-third of its weight of water, in which state it is called Hydrate of lime; when it is exposed to the atmosphere a sufficient time it reabsorbs from the atmosphere the carbonic acid gas which it lost during the process of burning, and in this state it resumes all the properties it had before it was burnt. This effect is soon produced after it has been slaked and spread on the land in a dry state, and it has very little time in its caustic state of quick lime to effect any alteration on the soil; it must therefore be in its original carbonaceous comminuted state when intimately mixed with the soil, that it can have any effect either on the soil or on the decaying vegetable matter therein.

The effect which it produces on the soil must

therefore be as an alterative in changing its texture by the addition of so much carbonate of lime to it in a very finely divided state.

Dr. Anderson and Du Hamel are of the opinion that powdered marble or powdered limestone has a good effect on grass land.

Anderson says, "that lime is no sooner slaked than it immediately begins to absorb its air and return to its former mild state; or in other words, it becomes effete, in which state it possesses the same chemical qualities in every respect as limestone.

"If this be spread out thinly upon the surface of the earth, it absorbs its air in a very short time. A few hours in this situation, restores a large proportion of its air; and in a day or two, at most, it becomes perfectly effete, as masons experience when they sweep together the scattered particles that have lain round their heaps of lime and attempt to use it in mortar by itself, for it is then no more coherent than sand, or moistened earth.

"Hence then it must follow, that in every case, lime is converted into the same state with limestone, in a few days after it is mixed with the soil; so that if it produces any effect at all as lime, as a saline substance, it must only be at the very first, when it is applied, and it must act ever afterwards merely as powdered limestone.

"But it is well known, that lime produces scarcely any sensible effect as a manure, at the beginning. Even the first year after it is applied to the soil its effects are inconsiderable, in comparison of what it produces in the second and succeeding years. From whence we must conclude, that it operates upon the soil, merely as a mild calcareous earth; and that its calcination is of no farther utility in preparing it for manure, than as a cheap and efficacious method of reducing the limestone to a fine powder." Other chemists say that it requires exposure to the atmosphere for a considerable time to render it completely effete or to receive its full quantity of carbonic acid gas. Kames, Young, Brown, and others say, that long experience has convinced them that lime is as efficacious in its effete as in its caustic state, and Kames thinks it produces little effect on vegetables till it becomes effete, it therefore appears not only from their opinion, but also from the experience of practical farmers, that the efficacy of lime on some land does not arise from any effect it may produce when in a caustic state, but from those qualities which it possesses in common with all other calcareous matter. It must be evident that lime, in a dry, slaked, or pulverized state, can be more easily and intimately mixed with the soil, than when it becomes wet, and in a state like mortar.

Is lime only a stimulant exerting its influence on something that is already in the soil? and if so, does its influence tend to exhaust this something? or, is it an enriching manure which gives nourishment to plants? or does it, by becoming a portion of the soil, improve its texture and composition by making the soil more capable of supplying the food necessary for the production of vegetables? Dr. Anderson says, "Writers on agriculture have been long in the custom of dividing manure into two classes; viz. enriching manures, or those that tended directly to render the soil more prolific, however sterile it may be. Among the foremost of which was reckoned dung, and exciting manures, or those that were supposed to have a tendency to render the soil more prolific, merely by acting upon those enriching manures that had been formerly in the soil, and giving them a new stimulus, so as to enable them to operate anew upon that soil, which they had

formerly fertilized. In which class of stimulating manures lime was always allowed to hold the foremost rank."

"In consequence of this theory, it would follow that lime could only be of use as a manure, when applied to rich soils; and, when applied to poor soils, would produce hardly any, or even perhaps hurtful effects." "I will frankly acknowledge, that I myself was so far imposed upon by the beauty of this theory, as to be hurried along with the general current of mankind, in the firm persuasion of the truth of this observation; and for many years did not sufficiently advert to those facts that were daily occurring to contradict this theory. I am now, however, firmly convinced, from repeated observations, that lime and other calcareous manures, produce a much greater proportional improvement upon poor soils, than on such as are richer; and that lime alone, upon a poor soil, will, in many cases, produce a much greater and more lasting degree of fertility than dung alone.

"In direct contradiction to the theory, I must add, that I never yet met with a poor soil in its natural state which was not benefitted in a very great degree by calcareous matters when administered in proper quantities.

"But I have met with several rich soils that were fully impregnated with dung, and therefore exactly in that state in which the theory supposes that lime would produce the greatest effect,—but upon which lime, applied in any quantities, produced not the smallest sensible effect."

And again, in another place, he says:—"I have often heard it urged, as an objection to the use of lime as a manure, that although it does indeed promote the fertility of a soil, in a higher degree at first, yet, in the end, it renders it much more sterile than formerly.

"This, like many other objections to useful practices, takes its rise entirely from the avarice and unskilfulness of those who complain. It is chiefly heard of in those parts of the country, where it is not uncommon for a farmer, after once liming a poor soil, to take fifteen or sixteen crops of oats successively, without any other dressing or alteration of crops. It must be a good manure that enables these soils to produce such a number of successive scourging crops of any sort; but it would be a marvellous one indeed, if it should prevent those fields from being exhausted by them.

"But is it not well known, that in all the richest and best improved parts of the country, lime has been long employed as a manure?—yet so far are these soils from being rendered sterile by it, that it is doubtful if any art, without the assistance of lime or some calcareous matter, could ever have brought these fields to their present degree of fertility. Those, therefore, who complain of the hurtful effects of lime as manure, proclaim what they ought to conceal, that they have had in their possession a treasure, which might have enriched their posterity, but which they have idly squandered away in their own lifetime." Although lime produces a great effect on certain poor land which has been in a state of nature, yet where lime is applied to poor worn out arable land which has been limed and exhausted by severe cropping, it has, from practical experience, no effect whatever.

If lime be a stimulant, there are roots in the soil of poor land in state of nature for it to act upon; but in poor worn out land exhausted by severe cropping, there are none.

Again, such worn out land may, from the very circumstance of its worn out state, be so loosened, that an application of lime, may as an ingredient in the

composition thereof, only tend to increase the evil by making it more loose and friable. Brown says, "It is sufficiently understood, that land which has been long in grass contains much vegetable matter, and that the trouble and expence of liming it would be amply repaid to the cultivator; but the propriety of applying lime on old arable lands, has been questioned, and with much justice, by the most part of practical agriculturists, and their doubts on that head are confirmed by the fullest experience.

"Were lime a manure, it would be a noble substance, for enriching and restoring fertility to lands worn out by a succession of corn crops; but as worn out land is not restored to fertility by the application of lime, we are warranted to consider it in a different light; or, in other words, as an article to bring certain principles into action, previously possessed by the soil. This conclusion is sanctioned by experience; and experience is a far better guide than the most plausible theory.

"When lime duly operates, the whole powers of the soil are put in a state of requisition, and may be forced to act till the very soul of vegetation is extracted. It is scarcely practicable to restore fertility to land, even to the best natural quality, which has been thus abused; at least, a considerable period must elapse, before it can be restored to its original fertility; but thin moorish soils, after being exhausted by lime, are not to be restored. To lime them a second time, is not only a useless expenditure of labour and money, but also productive of serious mischief. Soils of this description, after a second liming, are apt to singe and burn the grain that is sown upon them; and, even when dunged, not to make such a return as would have been rendered under different circumstances.

"Lime has been long applied by British husbandmen, as a stimulus to the soil; and in consequence of such an application, luxuriant crops have been produced, even upon soils of apparently inferior quality, and which would have yielded crops of trifling value had this auxiliary been withheld. In fact, the majority of soils cannot be cultivated with advantage till they are dressed with lime; and whether considered as an alternative, or as a stimulant, or as a manure, it will be found to be the basis of good husbandry, and of more use than all the other manures put together. Wherever lime has been properly applied, it has constantly been found to prove as much superior to dung, as dung is to the rakings of the roads, or the produce of a peat mire.

"From a pretty long experience, and considerable attention to the operation of lime, we are inclined to think that it acts both as an alternative and as a stimulant; operating in the one case as a medicine that changes the nature of the soil, and in the other as arousing or bringing into action the vegetable powers contained in the soil, which without such an application would have remained dormant and inactive. These opinions, we know are different from those maintained by several ingenious men but they are supported by the result of numerous trials, undertaken to ascertain how, and in what measure, lime operated upon the soil."

It is evident that lime, when applied to land in however small quantities, will tend to change its texture; and when there is vegetable matter in the soil, it may produce a greater decomposing disposition in it than before. In this case, it will act as a stimulant, hastening the decay of vegetable matter, and thereby furnishing the elements of vegetable life. Lime also acts powerfully on any irony matter in the soil, and on the gravel sands, and clay soils of the diluvial formation, and on the soil of the plastic clay, the new and old red sandstone, and the

basaltic formation, the effect produced by the application of lime is very great. This may be owing, as we have said before, to neutralizing the pernicious effects of the sulphate of iron, and converting it into a useful soil; and every fresh application of lime may therefore convert an additional portion of sulphate or oxid of iron into an additional portion of good and useful soil. When there is a deficiency of carbonaceous matter in the soil, a fresh portion of lime must increase the productive powers of the soil.

The effects which lime, as an alternative, has on the soil, must depend in a great measure, on the composition of that article, and also on the composition of the soil to which it is to be applied; for the composition of the various limestone formations, and also the chalk and marls vary greatly. The nature of the ingredients being different, the lime from the silicious limestone contains a considerable portion of silicious particles, and may answer best on strong clay soils, as it will furnish both silicious and calcareous matter to the clay soil; and the lime burnt from the lias limestone, which contains a considerable portion of clay, will produce the best effect on light sandy soils. But there are some soils on which lime when applied, has never produced any beneficial effect. This is the case with the soil on the oolitic formation, and other calcareous soils. This is evidently owing to the superabundance of lime already in the soil, so that an addition of calcareous matter only increases the evil; but where there is no calcareous matter in the soil, and also a great quantity of iron, as is the case in the soil of the new red sandstone formation, the lime has an increased effect on every fresh application. This is so well known in the neighbourhood of Taunton in Somersetshire, and over all the soil of the new red sandstone, that the farmers lime their land every time it comes in course of fallow for turnips, and this produces excellent crops even without dung.

It is most astonishing that writers on agriculture have retailed an opinion, that quick lime, when mixed in a mass of earth containing the live roots and seeds of weeds, will destroy them. Any attempt of this kind will meet with a complete failure; for the roots and the seeds of weeds cannot be destroyed by the fermentation or any heat that can be produced in such a compost. The same writers have also stated that lime hastens the decay of vegetable matter; whereas the fact is, that it retards the process of the decomposition of vegetable matter. If straw of long dung be mixed with slaked lime, it will be preserved, while if mixed with an equal portion of earth the earth will hasten its decay.

It has been shown that although vegetables are composed of mucilage, starch, sugar, albumen, gluten, and various other substances, yet all of them are reducible into carbon, oxygen, and hydrogen; and that water and air are composed of these substances;—that vegetable and animal manures are decomposed into the same elements, as those of water and air;—that any of the simple minerals which compose the surface of the earth, when unmixed with any other mineral, are unfit for the growth of vegetables; but that when these simple materials are intimately mixed together, that this compound when exposed to the influence of the sun and atmosphere, produces an abundant crop;—that there is no process going on at the surface of the earth amongst the materials which compose the cultivated soil which changes any of the mineral component parts of it into a new substance;—that none of the materials composing the soil, enter into the composition of the plants;—and that the application of manure does not always cause productiveness in soils.—*Morton on Soils.*

COLCHESTER AND ADJOINING HUNDREDS' AGRICULTURAL ASSOCIATION.

On Tuesday, Jan. 15, a meeting of the Members of this Association took place at Colchester Castle, to consider the propriety of effecting some important changes in the Constitution of the Society, and for extending the objects thereof, by giving prizes for fattening stock, for agricultural productions, &c., &c. The meeting was numerously attended. We noticed the following gentlemen present:—Sir G. H. Smyth, Bart., M.P.; C. G. Round, Esq., M.P.; J. G. Rebow, Esq.; J. F. Mills, G. Round, T. L. Ewen, J. Bawtree, J. W. E. Green, P. Havens, — Maud, T. Blyth (Langham), and S. G. Cooke, Esqrs.; the Revds. N. Forster, and E. H. Green; Messrs. W. F. Hobbs, Lythgow, D. Green, R. Green, Gripper, sen., Gripper, jun., Whitaker, Layzell, S. Harvey, E. Harvey, Ambrose, Bloomfield, Pearson, J. G. Fenn, J. Fenn, Farrow, Mason, Constable, Partridge, Gray, T. May, jun., Baker, Cooper, Taylor, &c., &c.

Sir G. H. SMYTH was unanimously called to the Chair, and opened the business of the meeting.

Mr. EWEN then stated, that the Committee had been diligent in drawing up rules and regulations which they considered would render the Association permanent and successful. Mr. E. read the rules and regulations, and a list of the different prizes recommended by the committee.

The Rev. N. FORSTER, of Mersea, wished to offer a remark upon the resolution recommended by the committee, in regard to the prizes for fattening beasts. The resolution did not specify, as some others did in societies established in the West of England and elsewhere, the manner in which such beasts were to be fattened; he meant in regard to the food that was to be given them. (*Hear, hear.*) It was very material, that the point should be clearly specified, whether upon hay and roots only, or upon corn and cake. He should like to have prizes for either mode of fattening, and should say, that a prize ought to be given to the farmer who produced the best fat beast, fattened from the produce of his own farm only, and thought that such a regulation ought to be introduced, and he should respectfully take the sense of the meeting upon it.

Mr. REBOW said, that when the matter was discussed in the committee, he suggested that the farmer should produce the best beast, fed in the cheapest and best manner that he could discover. He considered, that the best beast fattened in the cheapest manner was the most meritorious, and profitable to the farmer; therefore the committee had decided upon making no distinction as to food. (*Hear, hear.*)

Mr. FORSTER said he would not press his proposition.

Mr. HOBBS begged to offer one or two observations. He thought the annual subscription was too small; he found that a subscription of 10s. per year constituted a member. He would propose that the annual subscription should not be less than a sovereign, except for those who become members only for the encouragement of meritorious servants and deserving labourers. But those who exhibited their stock for the prizes, he thought the least they ought to subscribe was a sovereign. (*Hear, hear.*)

The CHAIRMAN was of the same opinion; and not less than 10s. from any other member.

After some discussion, Mr. Hobbs's proposition was put and carried.

A Member here asked if a subscriber of 10s. a year was qualified to introduce his servants as candidates for the different prizes.

The CHAIRMAN said, "certainly."

Mr. HOBBS then proposed, "that the words 'and roots' be added to his proposition, after the word 'stock.'"

The proposition was seconded, and on being put was lost. It was then agreed, that 10s. subscribers should be allowed to show roots.

Mr. Hobbs observed, there was another circumstance that he begged to call the attention of the meeting to, viz., that he found by clause 3, that rams and stock sheep were to be exhibited at the December show. It was not usual to show rams and stock sheep at Christmas time, for it was a very unfavourable season of the year for that purpose, as most of the rams were not at home at that time, and like the breeding ewes, were not in a proper condition for exhibition. He should therefore propose, that clause 3 be excluded, as far as it regarded the exhibition of rams and breeding ewes.

The proposition, on being seconded, was carried without opposition.

The CHAIRMAN here observed, that a paper had just been put into his hand from some gentleman present, which suggested that no member should show stock for prizes, which had gained the first prize elsewhere. (*Hear.*)

A desultory conversation here took place, which ended in Mr. MAY, of West Mersea Hall, offering a proposition, "that no member should shew stock for prizes, which had gained the first prize elsewhere during the year."

The motion was seconded by Mr. GREEN, and carried by a considerable majority. But after some further conversation, Mr. May consented to withdraw the resolution.

Mr. C. G. ROUND said, there was one rule that he observed was recommended by the committee, which he considered a very useful one, viz., "that no question of a political tendency should be introduced or entertained at the meetings of the Association." (*Hear.*) He would therefore suggest, that the meeting should decide upon a party, who were to determine what was a political question; and he thought they could not appoint a more competent party than the Committee.

The CHAIRMAN said he was quite sure that they had better not introduce politics, for they had much better talk about fat bullocks. (*Laughter.*)

Mr. C. G. ROUND then proposed "that it should be in the power of the committee to decide what questions could be entertained by the Society at their meetings." Carried.

Mr. HOBBS proposed "that the Committee have power to revise the present rules, and submit them to the Society at their next general meeting."—Agreed to.

Mr. REBOW had a pleasing piece of information to communicate to the meeting; he had to announce to them, three gentlemen who wished to become members of the association, viz., Lord Western, Lord Rivers, and P. Honeywood, Esq. (*Cheers.*) He should propose that Lord Western and Lord Rivers be patrons of the society. (*Cheers.*)

The following gentlemen were chosen Patrons:—Right Hon. Earl de Grey, proposed by John Bawtree, Esq.; Right Hon. Lord Western, proposed by J. G. Rebow, Esq.; Right Hon. Lord Rivers, proposed by J. C. Rebow, Esq.; Sir G. H. Smyth, Bart., proposed by John Bawtree, Esq.; Sir John Tyrell, Bart., proposed by G. Round Esq.; J. F. Mills, Esq., proposed by Sir G. H. Smyth, Bart.

Vice Presidents.—C. G. Round, Esq., proposed by John Bawtree, Esq.; J. G. Rebow, Esq. proposed by Sir G. H. Smyth; T. White, Esq., proposed by J. G. Rebow, Esq.; John Bawtree, Esq., proposed by Sir G. H. Smyth; T. L. Ewen, Esq., proposed by J. G. Rebow, Esq.; G. Round, Esq., proposed by Rev. N. Forster.

The following gentlemen were then appointed a committee for the ensuing year:—Mr. W. F. Hobbs, Marks Hall; Mr. Dixon Green, Greenstead Hall; Mr. E. Rarvey, Copt Hall, Wighborough; Mr. A. Whitaker, Boxted; Mr. E. Gripper, Sen. Laver Breton Hall; Mr. Hicks, Walton; Mr. T. Mason, Brightlingsea; Mr. J. G. Fenn, Ardleigh; Mr. Lythgow, Stanway; Mr. Shearman, Berechurch; Mr. Constable Wormingford; Mr. Green, Fingringhoe.

The CHAIRMAN was sorry to announce to the meeting, the retirement of their Secretary, Mr. Howard, from office. (*Hear.*) He had no doubt that Mr. Howard had the best of all reasons for retiring, as his

time was fully occupied in his professional engagements. He (the Chairman) therefore, should be happy to hear any gentleman proposed to fill the vacant office.

The Rev. N. FORSTER said that before that proposition was offered, he should submit a vote of thanks to Mr. Howard, for his past efficient services to the association. Carried.

Mr. HOWARD expressed his regret that he could not properly attend to the duties of the office, as his time was fully taken up in his profession. Under these circumstances, he felt that he was doing the association more justice in retiring. He sincerely thanked them for the compliment just paid him, and he heartily wished the association every success.

Mr. REBOW said he saw a gentleman in the room he wished to elect for the office, he meant Mr. Ewen. (*Cheers.*) He would propose that gentleman as honorary secretary, if he would have the kindness to accept the office. Seconded by Mr. Lythgow.

Mr. EWEN said it had been hinted to him on a former occasion, that he should take upon himself the office, but he felt at the time, that the office might be filled with more benefit to the society; but notwithstanding that, if it was the wish of the meeting, he would take office. (*Cheers.*) Mr. E. was then unanimously elected.

Mr. BAWTREE was proposed by Mr. G. Round, for the office of Treasurer.—Carried unanimously.

The CHAIRMAN then observed that it would be necessary to appoint an assistant secretary, as they could not ask Mr. Ewen to do all the work, although it was most advantageous to the society to have him as their secretary. (*Hear.*)

Mr. D. GREEN proposed Mr. S. Tillett, which was seconded by Mr. G. Round, and carried unanimously.

Mr. BAWTREE was highly gratified to find, that the manner in which he had executed the duties of the office of treasurer had met with their approbation, and he felt highly complimented by his re-appointment. (*Cheers.*) He thanked them for the compliment paid him, and as he was elected into office, he should like to commence the duties immediately, by receiving their subscriptions. (*Laughter.*)

Mr. REBOW thought it a very good hint, and observed, that under the former system, he gave two prizes, but under the present regulations he thought it better not to pursue that plan; therefore he should subscribe five guineas annually, instead. (*Cheers.*)

The members present then paid their subscriptions, and the Rev. N. FORSTER moved a vote of thanks to the Chairman, for his efficient conduct in the chair.—Carried.

The CHAIRMAN returned thanks, and the meeting separated.

THE PRINCE DE ROHAN POTATO.— A NEW VARIETY.

In the *Quarterly Journal of Agriculture*, for June, 1835, is the copy of a letter written from Geneva, of the date of the 25th of April, 1834, from Prince Charles de Rohan, to M. Jacquemot Bonnefont, Annoney in the Ardeche, which is as follows:—

"I send you, through my friend, M. Romilly, the potato which I promised you, and to which my name has been given in this country; the history of this potato is not less singular than the potato itself; he who obtained it from seed four years ago, shews it but will not give it to any person—he has refused it to King William; he has cultivated it in a walled enclosure; he only wishes to see it in perfection; and the seed of the following year he makes them to be taken up in his presence, keeps them under lock and key, and to be cooked for himself and cattle before his face: it is with great difficulty I have been able to obtain two tubers; this exclusive amateur having learnt that I had got some Cactuses, which he wished to have, begged me to give him some; I wished no money, but very much

to have some of his wonderful potatoes,—he gave me two of them, and made me give my word of honour that I would not send any of the produce to Holland, Belgium, England, Prussia, or Germany; happily he has not thought of Switzerland or France, for without this omission, I could not have had the pleasure of offering them to you. This is the mode of cultivating this potato—the earth is dug to the depth of twenty inches, make the distance between the holes four feet, and put two or three eyes or sets in each hole, earth up frequently; the stalks reaching six or seven feet high, should be supported on transverse stakes; this kind being late, the tubers, which are very farinaceous, should be taken up about Martinmas, when the stalks wither."

"To give you some idea of the extraordinary produce of this potato, I quote three examples at random. M. E. Martial, at Alais, gathered last autumn, tubers weighing 13lbs. 7oz., 11lbs. 9oz. and 9lb. 13oz. M. de Mentet, a proprietor near me, asked for tubers, when I could not give him more than a small tuber having four eyes; he weighed it for curiosity, and found it wanted a few grains to make it half an ounce; however this small tuber being planted, produced 48½lbs. The attorney of the Abbey of Auterive, Canton of Fribourg, to whom I had given two tubers two years ago, and who, delighted with his first harvest, after having eaten and given some to his friends, and either before or after planted the rest, obtained last autumn, six double-horse cart loads and eight scuttlies full: it is not the largest tubers that succeed best as seed."—*Le Cultivateur, Journal des Progres Agricoles.*

Having heard from some friends then travelling on the continent, of the above-mentioned potato, and having subsequently read the above account, I was induced to try by every means in my power, to obtain a few for seed, which I did without success; however, in the autumn of the year 1836, I was informed by friends then living in the vicinity of Paris, that they had occasionally purchased potatoes in Paris which weighed upwards of 10lbs. each, for which they gave one franc; that they purchased it as a treat, and that cut in slices of about two inches thick, it boiled well, was very farinaceous or mealy, and of fine flavor. The gentleman who wrote me this account of the potato, having left the neighbourhood of Paris for Spain previous to his writing, I was at a loss where to obtain some seed, and I applied to one of the first houses in London, to try through their agent in Paris, to get me a few of the potatoes, and after considerable delay, I obtained two small tubers, with the information that they were very dear and difficult to get. About this time I had a friend arrived at Paris to spend the winter, one whose active mind I knew would be rather stimulated than deterred by any difficulty arising in obtaining what I wished—he at once kindly undertook if possible to procure me some Rohan potatoes for seed; and after a great many enquiries, a most diligent search, and considerable expense also in the purchase, he obtained and sent me in a small basket, sixty moderate sized tubers; these I compared with the two tubers I had already received, and found them on inspection to be exactly the same sort: these tubers, though they arrived late in the planting season of 1837, I immediately planted as before described, but being under trees they suffered severely from the dry weather, yet the stems were eight feet high, and the produce was twenty-four bushels full measure, and some of the tubers very large: my object however, being to know what they would produce cultivated with the common field culture, I ploughed in the twenty-four bushels, with a moderate quantity of manure in rows, four furrows apart, or about thirty-six inches, on the 10th May last, 1838, without any other preparation than was bestowed on several acres of potatoes in the same field;—they again suffered from the dry weather, indeed to such an extent did my whole crop appear to be injured, that I had given up the hope of any satisfactory result, and I found by reference to my day-book it was not till the night of the 10th of June, and the morning of the 11th, that we had any rain sufficient to lay the dust; we took up the Rohan potato, October 18th, and the crop

very large; they much amused the persons taking them up, and other observers, by their extraordinary size and produce—many of the tubers weighing from 2½lbs. to 3½lbs.; they are very farinaceous, and delicately flavored; and I have no doubt, cultivated on good land and in the way mentioned, they would reach the size specified: of this we may however rest assured—and I can recommend them as yielding the most abundant produce under ordinary cultivation—that the produce is fit for the table of the most fastidious person. One of my old men observed, when he saw the crop lying on the ground, “why master, I never in all my life saw anything like this—why they would answer well to cultivate if it was only for the pigs!” And I quite agree with him; I certainly never before saw such a crop, nor potatoes so generally of such a large size;—and when we consider that they are excellent in quality, I cannot but think they will prove a desirable acquisition to the public, to whom I now offer them for seed the ensuing season.

The Rohan potato may be purchased at 10s. per bushel at *Trotsworth, Egham, Surrey*, where specimens may also be seen.

G. KIMBERLEY.

Trotsworth, Egham, Surrey, Nov. 13th, 1838

THE CORN TRADE.

The Farmers and Landlords of Worcestershire and Gloucestershire have adopted the following Petition to the Houses of Lords and Commons.

That your petitioners, having read the resolutions of the Manchester merchants for the repeal of the corn laws, deeply deplore the short-sighted views of men in their station of life, whom they had hitherto looked upon as not only of superior wealth, but of great intelligence, in which opinion they now much regret to find themselves mistaken.

That your petitioners, after such declarations from such a quarter, are compelled to come forward and endeavour to resist their designs, by showing the evil tendency of a repeal of the corn-laws, not only to the agriculturist, but to the poor also, and even to the manufacturers themselves.

That, first, the free importation of corn cannot fail to reduce the value of corn grown in this country, which is the express object of the corn law repealers.

That, after this, a reduction of rents to the landlord, and a reduction of profits to the farmer, must of necessity follow.

That the consequence of these two reductions would be the inability of the farmer and landlord to employ the poor to the same extent that they do now.

That the farmer and landlord would not be able to purchase manufactures to the same extent as they do at present.

That the farmers would not be able to give the same wages to their labourers, so that what the poor would gain in cheap bread, they would lose in the diminution of wages.

That the farmer, finding the arable land not capable of repaying the expense of cultivation, would convert it all into grass.

That the conversion of arable to grass would throw out of employ a multitude of labourers.

That, by depending solely upon foreign countries for our supply of corn, we put ourselves completely in the power of our enemies.

That, in case of war, those countries will shut their ports against us, and leave us in danger of famine.

That the landlord, by the reduction of his rents, will be compelled to reduce his establishment, and to discard part of his horses and carriages, thereby diminishing the amount of the assessed taxes, and the amount of the profit of those trades which depend on luxuries.

That he will also be compelled to dismiss part of his servants, by which not only will the amount of assessed

taxes be lessened, but a great addition be made to the number of idle persons already out of employ.

That the annual purchase of corn is a positive annual loss of circulating medium to the country, if actual money is paid for it to foreigners; for, as soon as one year's corn is consumed, more money is required for the next year's purchase, and so on annually, which, of course, must form a constant drainage of gold and silver.

That it is the duty of the legislature and government to keep as much money circulating in this country as possible, for the sake of the poor.

But if, as some supporters of this appeal affirm, the money does not go out of the kingdom, but only manufactures are exchanged for corn, then the whole and sole gist and meaning of the outcry for the repeal of the corn laws is, that the manufacturer may be able to put in his own pocket the profits which the farmers and landlords now receive. And will the legislature consent to such injustice? Will the landlord, the farmer, and agricultural labourer submit to it?

Your petitioners humbly submit that every person has a right to live upon the fair produce of his capital.

That if the landlord has no right to live upon the produce of his capital, neither has the fundholder any right to four or five per cent. as the produce of his.

That the produce of landlord's capital is only from three to three and a half per cent., while that of the manufacturer and tradesmen varies from 10 to 100, 500, and sometimes 1000 per cent.

That the landlord, notwithstanding this small return for his capital, is taxed with the support, not only of his own agricultural poor in their old age, but also of the manufacturing poor.

That out of the small produce of their capital the landlord and farmer support the greater part of the burdens of the state by the malt tax, &c.

That from these burdens the landlords cannot run away to another country, like the manufacturer.

Your petitioners pray for two laws—one to compel all manufacturers to support the poor labourers who acquired their money for them, from the moment they are unable to work to the end of their lives; and the other to prevent their transferring their capital to foreign countries.

And your petitioners pray that, if any repeal of the corn laws takes place, your honourable house will at the same time pass a law that all land shall be free from half the present and future taxes, which half shall be laid upon the capital of manufactures.

That if the corn laws should be repealed, a law ought to pass to reduce all interest of mortgages, of trusts, annuities, and other incumbrances to half the present interest.

That, if manufacturers congregate together to make direct attacks upon the stability and prosperity of the farmers, the farmers will be justified in petitioning the legislature to prevent the undue extension of manufactures.

That the greater part of the landlords themselves are descended from manufacturers of former days, who, having acquired as much money as they wished, chose to invest it in land, and become, in fact, manufacturers of corn instead of cotton.

Lastly, that the majority of the present landlords, being descended from tradesmen and manufacturers who originally bought the land, are surprised the manufacturers should be so short-sighted as to establish a precedent for future manufacturers against their own children; for there is not much doubt that the descendants of the present Mr. Gregg, and the other gentlemen of the Manchester Chamber of Commerce, will quit trade, and invest their capital in land, and thus subject themselves to the encroachments of future manufacturers.

Dec. 27, 1838.

ON CUTTING WHEAT BEFORE IT IS RIPE.

—I am well aware that I am now advancing a subject upon which the generality of farmers have made up their minds; and that it is very probable I may be

thought singular in my opinions—nevertheless it is by agitating opinions and exchanging thoughts that the truth is elicited. With regard to the cutting of wheat, the assertions which I have found most prevalent are, that wheat may be cut some time before it is ripe; that it ripens at least ten days afterwards in the field. It frequently happens with farmers who grow a great breadth of corn, that they find it convenient to begin a certain portion of it, in order to employ the labourers they have engaged, and whom they wish to keep in constant work until the harvest be finished; under such circumstances, it is a happy belief that you are doing no harm in persevering. The miller also tells you that the sample is brighter and he likes it. But does the farmer find that he can sell a shrivelled, and almost green sample for the same as one more bold? I never found it so—on the contrary, the purchaser generally does not fail to find fault with the corn—yet the corn cut before it is quite ripe is thinner skinned, and contains no doubt a smaller portion of bran. But depend upon it, corn thus sold, neither yields a proportionate profit to the grower nor consumer. Taking into consideration weight, and bulk, and price, the ripe corn will be found most profitable—I name this matter now, because the last harvest has afforded very abundant examples of the different states of grain, being in many cases of two growths, half green, half ripe; and the farmer may, if he will take trouble, successfully scrutinize my assertions. Many years ago I instituted some experiments as to the value of bright unripe wheat, compared with that fully ripened; and the result was, that it was not so glutinous, and did not imbibe nearly so much water in the flour, and consequently made a much less weight of bread. I regret that I cannot state the trials more particularly, but like many young men, I was careless of noting down particulars, and did not expect they would ever be made public—indeed, I now think, to the public, the experiments are original, for my observation and reading have never disclosed them to me from any other source—I trust there are others who will consider an examination of the matter worth pursuing. What I contend for is, that wheat, when the ear begins to droop, is then only fit to be cut; that though the sample may look coarser, the produce to the farmer will be greater, and more particularly so when he is himself the consumer; but if it be cut earlier, it should by all means have plenty of time in the field before housing, for it will not ripen in the rick; and who is not tempted, if the weather be fine, to bring it in too soon?

AN OLD AND PRACTICAL FARMER.

THE CORN LAWS.

(From a Correspondent.)

A FEW CONCISE HINTS AND SUGGESTIONS OFFERED FOR THE CONSIDERATION OF THE AGRICULTURISTS AND LAND PROPRIETORS OF THE UNITED KINGDOM.

It has been said of the Duke of Wellington that he never allowed an important movement to take place in the position of the enemy opposed to him without seizing the critical moment at which they were most exposed to an attack, and which his penetration always enabled him to perceive, without striking a decisive blow to the advantage of his country.

The present movement of the Manchester Chamber of Commerce and its followers, for the avowed purpose of enforcing the abolition of all corn laws, has so completely exposed the weakness of their cause and the inconsistency of their demands, that a union among the agriculturists and land proprietors, together with judicious measures summarily acted upon, it is presumed, would rescue them for the future from all such unwarrantable attacks upon their interests and property.

In the *Morning Herald* of the 22nd inst. (Jan. '39) is inserted a letter, subscribed "An Underwriter," which contains a narrative of a visit to one of the Manchester petitioners, an old acquaintance, who had, in conjunction with a partner, commenced the cotton trade or manufactory within the last twenty years, in which time the capital brought into the concern had increased from 5,000*l.* to 500,000*l.*, notwithstanding he found his friend living in a style of princely magnificence, equal at least to 10,000*l.* a-year.

In the acquisition of such almost incredible profits, the manufacturer neither spares sex nor tender age, as long as they can administer to his pampered wants and passions—but when worn out by long continued daily, and nightly exertions, and that often in contaminated air and without adequate sustenance and rest to support such enfeebling labours; demoralized as they then are, the only recompence awarded to them for such services is a committal to the care of their respective parishes, and thence to the union workhouses, to be there maintained chiefly at the expense of those very agriculturists and landowners, denominated by these cotton lords "blood-sucking vampires." Although these poor wretched creatures, in every sense of the word, have been reduced to their present state of woe, chiefly by the introduction of untaxed machinery as a substitute for human labour, no remorse seems to have been felt by these petty tyrants, nor means taken even by the legislature to obviate the injury done either to the persons thus thrown out of employment, or to those on whom the burthen of maintaining them ultimately falls. This privilege and exemption of liability being of unlimited extent, so are likewise the evils attendant thereon. Surely while the manufacturers are receiving on their capital annual profits averaging 30 per cent. and upwards, they ought to be called upon by the legislature to make provision for the aged, exhausted, maimed, and even those thrown out of employment by the introduction of such machinery; and this can perhaps be effected in no better way than through the same medium. It is therefore here proposed, that each engine used as a substitute for human labour be assessed towards their maintenance, at the rate of say 1*s.* a-day per horse power, when the average earnings of the persons employed in the manufactory are only equal to the value of a peck of wheat per day, of not more than twelve hours duration; but in case the average wages do exceed that value, then the rate should be reduced according to a graduated scale. In order to give the masters the advantage of machinery, when, and in proportion as the advance of wages increases the expence of manufacture, till they shall attain the value of two pecks, when the rates should cease altogether. Under such regulations, with frugality, considerable savings might be effected, especially among the children employed, and adults without families, which, being deposited and accumulated in savings' banks, might, by a judicious arrangement on liberal principles in favour of the depositors, be converted into Government life, and long annuities, as jointures, to a limited amount, so as to insure to each individual and their families the means of subsistence in old age, sickness, &c., without having recourse to parish aid and union workhouses. As it is well understood that manufacturers have more to fear from the rivalry of frugal, steady workmen of good character, than from any other description of individuals, it is not to their interest to encourage provident habits among their work-people, unless their savings could be so disposed of as not to become available for the purpose of commencing and carrying on business on their own account. It is therefore with a view of raising the condition of the labouring classes, without exciting the jealousy and opposition of their employers, that these observations are here made,

Supposing the agricultural labourers to be paid on the above principle, and perhaps at the same rate, they would then not only be able to keep themselves and families in comfort, but might become considerable consumers of the manufacturer's goods to an amount altogether probably much beyond our present foreign

export trade, which has recently been calculated to amount to about one-sixth of the whole of our manufactured productions. It has also been stated, that "if the people of England, Ireland, and Scotland were but enabled to spend one penny per day more than they now do, it would be equal in amount to all our foreign exports, and make as large returns to us as a nation as we derive from our foreign trade." Our legislators ought therefore to pause, and consider well the consequences which may be the result before they risk a change of measures of such doubtful policy as the encouragement of foreign agriculture at the expense of our own. So little do the petitioners for a free trade in bread corn understand the nature of their interests, that while they are clamouring at Sheffield for free trade, their intended petition admits that foreigners, "*even after the payment of our import duties*, actually undersell our own manufacturers in this country, and especially in a great number of articles formerly the exclusive production of this town." Does not this chiefly arise as a natural consequence from our liberal system of supplying them with coals duty free, and at a cost lower than our London manufactories can obtain them? And supposing the duties on the articles above alluded to were taken off on the free trade principle, together with the duty on corn, in what manner would they be the gainers by the change?

When it is taken into consideration how much wheat has been consumed within the last five years in feeding stock, for the want of a market and remunerating prices, and the great improvements now taking place in the cultivation and selection of the best wheats, there can be little doubt that, under the system of storing the surplus grain in abundant seasons, and the protection from foreign competition under the regulations now to be proposed, Great Britain would actually produce sufficient for its own consumption, at moderate but remunerating prices. It will be necessary, however, first to notice some of the suggestions already put forth on this important subject.

The first proposition requiring consideration is, that as the present averages are not made out from the direct sales of the agriculturist's produce, but often from fictitious purchases among the corn-factors, the selling price of the grower alone should regulate the averages. This would unquestionably be a great improvement but all such arrangements must necessarily incur considerable expense to the country and without materially benefiting the revenue.

The next proposition, taken from *The Morning Herald* of Jan. 26th, comes from Lord John Russell, in a letter dated the 21st inst., to Mr. Stanton, of Stroud, in which he states that it is desirable not to maintain a system of duties, which, as experience has shown, increases the high prices of dear years to the consumer, and depresses the low prices to the producer, and that it is desirable not to alter too frequently the laws by which the direction of capital and the channels of industry are regulated. It is his opinion that a moderate fixed duty would be more advantageous, not only to the trade and manufacturer, but likewise to agriculture than our present fluctuating scale. It must be admitted that a fixed duty on the importation of foreign wheat, sufficient to protect the agriculturist, so as to enable him to maintain himself and family out of the profits of his farm, would materially increase the revenue; but how it is to act alone in preventing fluctuations, so much complained of, is difficult to surmise, when the innumerable incidents which may occur to influence the supply of our markets, are taken into consideration. If, however, government should come to the resolution of *fixing* also the price at which *foreign wheat* shall be sold out of bond,—say at 68s. per quarter, neither more nor less,—there would be little fear of the price of British wheat ever exceeding that amount, consequently the quartern loaf of best bread ought not to reach at any time 9d., but might be afforded much lower; which, it is presumed, would be a very material point gained by the mechanic and agricultural labourer, at their present wages, and certainly the farmer ought not to complain,

as he would be sufficiently protected against foreign competition. Thus far we may safely advance without incurring any risk as to consequences, notwithstanding the threats held out by the cotton lords, that they will transfer their capital to other shores.

The last proposition to be considered here, in addition to the fixed price for foreign wheat is, that a chartered company be established for the reception into store-houses at a fixed price, say 56s. per quarter of all *sound British wheat* of not less than a given weight, that may be offered, beginning to receive new grain on the 1st of May*: and for supplying all demands for wheat at the rate of 64s. per quarter, till the store shall be exhausted; from which it is calculated the best bread might be made and profitably sold at 8d. the quartern loaf.

The capital of this company should consist of 100l. shares, but without limitation as to the total amount, so long as the whole may be profitably invested, in accordance with its charter, and without preference to any party, so that no shareholder should be permitted to dispose of any share, otherwise than at its original value, nor retain an undue proportion of shares to himself, after having received his dividends for the year just ended, and a timely notice of the number of shares required to be given up for the use of new subscribers. The intention being to give to every individual in the kingdom, possessing the means, the advantages which may result from such investment, and which would be greatly enhanced to females, could they in law retain it (a single share) as a jointure without further expense in case of marriage, as a security against pauperism, and a resource under adverse vicissitudes to which all are liable.

Besides the increase to the revenue and the protection which would be afforded by these measures, as well to the consumer as to the corn-grower, and other advantages already enumerated, an unerring *standard of value* would be established on the principle advanced and recommended by Adam Smith, who observes in his *Wealth of Nations*, B. I. chap. xi., "Labour, it must always be remembered, and not any particular commodity, or set of commodities, is the real measure of the value, both of silver and all other commodities;" and "that equal quantities of corn will, in every state of society, in every stage of improvement, more nearly represent, or be equivalent to, equal quantities of labour, than equal quantities of any other part of the rude produce of land." "Corn, accordingly, it has already been observed is, in all the different stages of wealth and improvement, a more accurate measure of value, than any other commodity, or set of commodities. In all those different stages, therefore, we can judge better

* It has been suggested, by an experienced Agriculturist, Miller and Corn-factor, that new Wheat might also be admitted from November till May for immediate consumption, at a reduction in price of 8s. per quarter below the value of the better seasoned grain; that, by due care in turning it over frequently, and by disposing of it first, greater benefits would result to the community, and to the agriculturist in particular, by allowing him at all times the opportunity of converting his wheat into money, when most required. He, however, strongly objects to any system which would have the effect of fixing the price of agricultural produce, as farmers are a speculating people, and wish to take advantage of fluctuations. Should this be really the case, it is difficult to conceive how unobjectionable legislative measures can be framed, which will prove satisfactory to them. Indeed it becomes very questionable what claim these speculators have upon the legislature at all, if it be only to interfere when they find the current has set in against them. As the above observation cannot apply to the necessitous agriculturists, who form the great majority, we may rather consider it to be the opinion only of speculating capitalists, whose interests we are certainly not now espousing. As our proposition comprehends only the heavy, well seasoned wheats, for the obvious reason, that a deviation in price would open the door to abuses and frauds, and thereby invalidate the whole scheme for establishing fixed prices; yet, the advantages which the reception of new and inferior wheats at the reduced price of 8s. per quarter would afford to the more necessitous class of agriculturists, by enabling them to meet their engagements, is worthy the consideration of landed proprietors, who might give their sanction and support towards the establishment of a second company, on the above principle.

of the real value of silver, by comparing it with corn, than by comparing it with any other commodity or set of commodities. Corn, besides, or whatever else is the common and favourite vegetable food of the people, constitutes, in every civilized country, the principal part of the subsistence of the labourer." Wheat being then the rude produce of this country, which affords the chief article of subsistence to the labourer, his earnings should be at all times such as to secure him from deprivation of that most essential article of support, while following his daily avocations. Nothing would so effectually accomplish this, as making wheat the standard *medium* by which the value of labour should be ascertained and regulated. In which case it will be of little importance to the labourer whether the price be high or low, provided it could be made stationary, so that other commodities may, and retain permanently their relative value.

Among the beneficial results to be anticipated from the foregoing proposed changes, would be a gradual correction of the injurious effects on the landed interest, produced by the alteration in our currency, consequent upon what is usually denominated Peel's Bill.

THE TROTSWORTH MANURE.

SIR,—As an agriculturist I am anxious to learn as well as numberless other persons, the precise time that may suit Mr. Kimberley to publish his pamphlet on the Trotsworth Liquid Manure, which he says shall contain the entire particulars of the various ingredients of which it is composed, and also the benefits to be derived from the application of it. These declarations are certainly somewhat different to the announcements of those extraordinary discoveries we often see advertised to assist the farmer, but the ingredients of which are always kept from the public, and are only to be procured in a manufactured state.

I have conversed with persons who are well acquainted with Mr. Kimberley, and who speak highly of his reputation as an agriculturist, and one whose integrity may be relied upon.

And likewise that he has amply convinced hundreds of persons (and many of them noblemen of the first reputation as warm friends of the farmers,) of the great benefits to be derived from the use of the ingredients he employs; especially by shewing his own crops on naturally poor land?

But he tells us in his advertisements, that the publication of his pamphlet depends upon whether he gets sufficient subscribers to remunerate him for the trouble and expence he has incurred in ascertaining by long continued experiments the due proportions of the various ingredients to suit the different kinds of soil.

Now, if all this be true, and that hundreds of persons have been perfectly convinced of the benefits offered to the country at large, how is this delay in the publication accounted for?

It is said that the landlords should investigate the truth of these assertions and if satisfied subscribe for each of their tenants; this I think is a very reasonable suggestion, and would very possibly bring this cheap manure into earlier use.

Some persons I find are also of opinion that the benefits to be derived from the economy and the fertilizing properties of it, that the increase in the crops will render the corn-laws a perfect dead-letter; and that England may, if she chooses, become a corn exporting country; and for 1*l*. (the amount of the subscription for the pamphlet) we may find the way to enlarge our barns, extend our rick-yards, and fill our pockets.

For such advantages I willingly subscribe my pound, and as no monopoly is attempted, by keeping back the materials used, five pounds would not have deterred me from subscribing.—I am, Mr. Editor,

Jan. 11.

A BERKSHIRE FARMER.

COMMUTATION OF TITHES ON FRUIT PLANTATIONS.

TO THE EDITOR OF THE MAIDSTONE GAZETTE.

SIR,—In your report last week of a meeting of fruit growers in the market-room at Maidstone, Mr. T. Selby introduced a petition to be signed by landowners for the commutation of tithes on fruit plantations. It will be seen by viewing the case in its proper light, that an equitable rent-charge will be fixed on fruit plantations as on other land, without any other act being passed for that purpose; there can be but little doubt, but that the framers of the acts now extant and in operation on the commutation of tithes, took the fruit, and all other produce into consideration; so that this petition will be seen to be entirely superfluous. In the first place, we will consider a certain parish or district in which there is a quantity of fruit plantation, hop, arable, and pasture land; again, suppose the rectorial and vicarial tithes are awarded either by voluntary agreement, or by the tithe commissioners, the next step will be to award an equitable tithe on all the land of that parish. The whole of this land that is titheable will bear a portion of rectorial and vicarial tithe, and an extra charge on all hop land, but no extra charge on fruit land, as it may be fairly contended that fruit plantation (of whatever kind) is not worth more tithe from the time of planting till the period of its being exhausted or worn out than arable land, provided the land be of equal quality. If planted with apples, pears, plums, or filberts, it will be from seven to twelve years before coming into bearing, during which time it can pay no tithe: and when arrived at maturity, these trees last but from thirty to forty years before decay takes place. Gooseberries, currants, &c. will come into bearing in three or four years; let it be remembered the tithes are to be awarded according to the real and actual value they are to the tithe receiver, and not what they may be estimated to be worth to the landowner; it will be clearly seen that the expence of collecting fruit tithes in kind must be immense, and perhaps in many cases actually greater than the worth of the produce collected. An extreme case shall be put to demonstrate this view of the adjustment of tithe. Suppose 1,000 acres of land of equal quality to constitute any given parish or district, belonging to three distinct individuals A, B, and C; say A, 50 acres of fruit land; B, 100 acres of hop land; C, 850 acres of arable land. Suppose a commutation of tithes effected; the rectorial at 42*5*l., the vicarial at 17*5*l., it is plain there is no rectorial tithe due from A or B, so that C is subject to the whole amount of 42*5*l. Let this amount be paid on the whole of the 1,000 acres, which will amount to 8*s*. 6*d*. per acre, to make up this deficiency in C's tithe 1*s*. 6*d*. per acre must be added, which again extended over the 1,000 acres would produce 7*5*l. for the vicarial tithe, leaving 100*l*. to be paid by the extra charge on hop land, which would be in this case 1*l*. per acre. The case would stand thus:—

A, small tithes	3 <i>l</i> . 15 <i>s</i> .	great tithes	21 <i>l</i> . 5 <i>s</i> .	total	25 <i>l</i> .
B, do.	107 <i>l</i> . 10 <i>s</i> .	do.	42 <i>l</i> . 10 <i>s</i> .	do.	150 <i>l</i> .
C, do.	63 <i>l</i> . 15 <i>s</i> .	do.	361 <i>l</i> . 5 <i>s</i> .	do.	425 <i>l</i> .
	175 <i>l</i> . 0 <i>s</i> .		425 <i>l</i> . 0 <i>s</i> .		600 <i>l</i> .

It must be evident to any person, if the rent charge is laid on in this equitable manner, it will not affect the land, whether it becomes arable or grass land at any future period. If there was to be an extra charge on fruit land as on hop land, it would amount almost to a prohibitory tax on planting young plantations, whereas if the tithes on fruit land are laid on as on the arable land, the titheowners will be receiving as much from it as they have hitherto received, and the fruit growers on their part will be satisfied with the adjustment, and no liberal tithe owner or land owner will dispute its equity.

A LANDOWNER.

Jan. 19th, 1839.

ON SUBSOIL PLOUGHING.

TO THE EDITOR OF THE PRESTON PILOT.

SIR,—The accompanying paper, was intended to have been read at the late meeting of the Preston Agricultural Society; but owing to the length of the proceedings it was withheld. Should you consider its circulation as likely to prove beneficial to the agricultural community, you will perhaps give it a place in your columns.

I am, Sir, yours, &c.

A. B.

Jan. 15th, 1839.

ON SUBSOIL PLOUGHING.

Considering the subject fixed upon for discussion by the Preston Agricultural Society, of "the benefits to be derived from the introduction of the subsoil plough," of the very first importance to this district, I am induced to put together a few observations, in hope they may be (in lack of better information) of advantage to those, who have never had an opportunity of witnessing the beneficial results attendant upon its use.

The subsoil plough, as invented by Mr. Smith, is constructed wholly of iron, and varies in weight, from two cwt to four cwt; being solely adopted for *loosening* the subsoil, without bringing it to the surface, or mixing it with the incumbent earth, it is *not* provided with a mould board.

It is indispensable that the land should undergo a thorough drainage, previous to the introduction of the plough; as deep ploughing in undrained retentive soils, is the worst possible thing.

The method of using it, is first to take a furrow with the common plough, to about six inches in depth, following immediately with the subsoil plough, to the depth of sixteen inches; to effect which in strong soils, will require six horses.

After the substratum has been exposed to the action of the atmosphere, for five or six years, it may then with considerable advantage be incorporated with the active soil, and although previous to the drainage and subsoil ploughing, the substratum was of the most tenacious nature, still experience has proved, that the active cultivation of water and air, in connexion with a suitable rotation of crops, renders even the most stubborn clays, as friable as the lighter loams, and at the same time as permanently productive.

The success of the operation depends in a great degree, upon the perfect execution of the drainage; which, in retentive soils, can only be effected by having the drains at intervals, of from four to seven yards, (according to its retentiveness), and which should be cut to the depth of at least two feet and a half, and filled in with broken stones a foot deep: thereby leaving sufficient space for the perfect operations of the plough.

The drains should, if possible, be executed when the land is in grass, as the work can then be done so much more neatly; and as drains have frequently been rendered entirely useless, by the soil working in at the top, every precaution should be taken in their execution to prevent it, by placing thin sods (taken off the surface) on the top of the stones, with the grass side downwards, and overlapping at the ends; in case tile drains are adopted, they should be filled three or four inches deep with either stones, coarse gravel, or cinders.

The operations of the subsoil plough, are not to be considered as alone confined to the strong soils; but may be used with considerable advantage, down from the most intractable clays to the lightest sands. The winter months, in ordinary seasons, are considered the time when the subsoil plough, can be most advantageously applied.

So convinced am I of the importance of a perfect system of drainage, in connexion with subsoil ploughing, as the means of most effectually and readily increasing the fertility of the soil, by giving to it a porous substratum, allowing the redundant moisture a more free and effectual passage, and giving to the roots and of plants a greater facility of extension in search of healthy and invigorating food, that I sincerely hope

the society will see the importance of encouraging the system, by offering liberal premiums as an inducement for its adoption.

A. B.

Sept. 1838.

PLOUGH DRAINAGE.

The following correspondence has lately taken place between the Marquis of Chandos and Sir C. M. Burrell, Bart:—

"MY DEAR SIR CHARLES,—I have delayed writing, because I was desirous of giving you a full report of the Pearson Plough. I have now drained about sixty acres of deep clay, with a full complement of men and horses; the former 19, the latter 8. The average draining has been about $4\frac{1}{2}$ acres per day; the ground made use of has been for many years left entirely without any attempt at draining; consequently, the top water was considerable. Nothing can have done better than the plough, as far as it has been tried; and the quickness with which it has worked, and the clean cutting and perfect draining, certainly, are most obvious. The expence, no doubt, is greater than our shoulder draining with turf; but if the drains stand, which are made by the plough, its success must be beyond all doubt. As to its doing for light soils, it clearly cannot; we tried it on a loomy soil, it failed instantly, tearing the land, and not making the clean cutting, which upon clay is always the case.

The farmers like it, but are afraid to face the expence. By continued use, which will be the case with me, I hope to give them courage. Upon the whole, I am well satisfied with it, as it is obvious it will far exceed in point of labour the work of men; and upon a clay soil I have no fear of the drains failing. Your two men have worked well, anxiously evincing the greatest attention with civility, and have done all in their power to please me, and do credit to their plough. They will eat their Christmas dinner here, and then return with, I hope, no bad opinion of Buckinghamshire.

"The men take to the plough well, and work kindly. I am sincerely obliged to you for your kindness and attention.

"And I remain, very sincerely yours,

"CHANDOS."

Wootton, near Aylesbury, Dec. 18, 1838.

"My dear Lord,—I have shewn your letter to two intelligent tenants of mine, one of them (Mr. Michael Botting, of Dial-post Farm, West Grinstead) having when a youth worked on his father's farm at shoulder turf draining, and his opinion is that putting it at the lowest scale of price of 3s. per score (20 rods) it would cost infinitely more per acre than the Pearson Draining. For if the shoulder draining were done at half-rod distance, as done on my land with the Pearson Plough, it would cost 24l. per acre; whereas the Pearson Drainage costs less than 3l. per acre, shewing a balance in favour of the latter of 21l. per acre; and if both were done at whole rod distances from the drains, thereby reducing the quantity of drainage to one-half, then the relative cost would be less than 1l. 10s. per acre for the Pearson Draining, and 12l. per acre for the shoulder turf draining, leaving a balance of 10l. 10s. in favour of the Pearson Drainage. And if the costs of the shoulder drainage were 4s. per score (or more as in some parts) the balance would be still greater against the shoulder draining.

"C. M. BURRELL."

Knepp Castle, Dec. 21st, 1838.

CORN LAWS.

TO THE EDITOR OF THE STAFFORDSHIRE ADVERTISER.

SIR,—It will perhaps be deemed presumptuous in me addressing you on the subject of a "Repeal of the Corn Laws," or it may be attributed to interested motives, but perhaps I am the only person in this county who has imported foreign corn to any extent. I have been engaged in the corn trade for upwards of twenty years, the latter part of which time I have been farming a considerable quantity of land; I ought, therefore, to be competent to know some little of the matter, without being liable to the charge above stated. My desire is to warn landlords, tenants, and tradesmen of the danger that awaits them, if the now all-absorbing question of a repeal of the Corn Laws, or a low fixed duty, (which would amount to the same thing) should become the law of the land. You, Sir, and some of your readers, perhaps, will feel a little startled when I inform you that I have, within the last four years, had some of the very best qualities of both white and red wheats purchased in the Baltic ports at 21s. to 22s. 6d. per quarter, with a freight to Hull of 2s. 6d. per quarter, and 1s. per quarter for other expenses; so that you see it is possible to have wheats laid down in our own stores at 24s. 6d. to 26s. per quarter; beans, 13s. to 14s.; barley, 13s. to 15s.; and oats, 9s. to 10s. 6d. per quarter; and within the last eighteen months, most of the above grains might have been purchased for a few shillings per quarter more money. Now, Mr. Editor, let us try how we can grow corn in this country to meet the above prices. Suppose we take wheat, the staff of life, for our guide, and I think it will be allowed by all experienced persons, that in this county, and I might add throughout all England, the average of years will not exceed three quarters of wheat to an acre, or scarcely so much, but suppose we take it at three quarters, which at 26s. per quarter would equal £3. 18s. and the cost of growing that quantity would be

Seed, 3 bushels to an acre, at 3s. 3d. per bushel	0	9	9
Ploughing and sowing on clover leys per acre	1	0	0
Weeding and water-furrowing ditto	0	2	0
Reaping and thrashing ditto	1	4	0
Getting, thatching, and carting to stack-yard and market	0	7	0
Poor rates	0	2	6

3 5 3

leaving 12s. 9d. per acre to meet rent, tythe, taxes, interest of capital, wear and tear of implements, and the expense of the next year's fallow, which land sown on clover leys always requires; but presuming it sown on a fallow, (and more than one half of the wheat sown in Staffordshire is so,) then the case would stand thus:—

Team work, &c., in fallowing land, say, at a low calculation, is four ploughings and harrowings, (but strong land requires more than this	3	0	0
Seed, three bushels per acre, at 3s. 3d. per bushel	0	9	9
Manure, or lime	3	0	0
Weeding and water-furrowing	0	2	0
Reaping and thrashing	1	4	0
Getting, thatching, and carting to stack-yard and market	0	7	0
Poor rates for two years	0	5	0

8 7 9

So you see this three quarters of wheat would cost the farmer, on a fallow crop, without any rent, (which would be two years) tythe, taxes, or interest of capital whatever, 8l. 7s. 9d. or 2l. 15s. 11d. per quarter. Now, Mr. Editor, I will ask the tradesmen of all our inland towns (and of this county in particular,) although it is the second county in England as a mining and manufacturing one, whether they would like to lose their best customers, agriculturists, farmers, tradesmen and labourers, for it plainly appears that an alteration of the corn laws, as above, would destroy not only the farmer, but also the tradesmen dependent on him; and render us wholly dependent on a foreign nation for our supply of daily bread; and reduce this now respectable class of men to a level with the poor farmer and labourer of Ireland, or of some of the foreign nations, where they appear deprived of every comfort, and raised but one step above the brute creation, their principal (and in many instances only) food being rye or barley and bread and potatoes, scarcely ever tasting animal food. In some parts of Germany the farmer and his horse when at work share the same loaf! In the course of my business I have within the last few years had opportunities of talking with many respectable corn merchants from Germany, some of them Englishmen, who have for some time past been settled in Hamburg, who have called on me, and with whom I have had dealings, and they all say that we never can compete with them until we reduce our farmer and his labourer to the level of theirs, and which they hope will never be the case. I call upon every landowner, farmer, farmer's labourer, and tradesman, yes, I add tradesman, (for they are equally interested with the landowner and farmer) to step forward and use every endeavour in their power to stay the destroyers of the national wealth. Should the opposers of the present corn laws succeed in their destructive endeavours, it will be a death blow to this happy and highly-favoured country; and they who are loudest in their calls for a repeal, will, when too late, acknowledge that the corn laws as they now stand, are the bulwark of our nation's prosperity. The productive industry of this country yields about 520 millions pounds sterling annually, of which, as was well stated at the Liverpool meeting on Wednesday, the 16th inst. by my friend, Mr. C. T. Dunlevie, a highly respectable corn merchant of that port, that 246 millions were produced by agriculture alone, while that of the manufacturing interest was 148 millions sterling. The whole amount of the export of the country, in the average of three years, ending 1837, as could be proved by parliamentary documents, was only 48 millions. The number of acres of land in cultivation amounted to 48 millions, the number capable of being brought into cultivation 15 millions, and the number of unprofitable 16 millions, making altogether 77 millions. Besides, who are these factious declaimers against the corn laws? The great cotton lords and manufacturers of Lancashire and Cheshire; men, it is well known, who have acquired and are acquiring immense fortunes; men, some of them, whose incomes vie with the nobles of the land. They have no decent pretence for a complaint. I doubt not but that, besides their political motives, which they vainly attempt to conceal, they are desirous of diverting public attention from the horrors of their own mills, where the poor children are worked to death in a temperature of 86 degrees. They have

no bowels of compassion for these unfortunates ; but surely a time will come when part of their enormous gains will be taken away, by compelling them to work shorter hours. Negro slavery is nothing to the present system. Depend upon it the public are not to be put upon a wrong scent in this way, or be induced to consent to abandon the corn-laws for any such purpose as these men have in view. I once more, therefore, call upon landowners, farmers, manufacturers, tradesmen, labourers, and all who have any regard for the welfare of their country, as well as respect for the rights of property, not only in this county, but in all England, to assemble together to petition the legislature firmly to maintain and uphold the existing corn laws, the repeal of which would be, as I have already stated, the forerunner of general want, misery, and ruin. I beg leave to subscribe myself a well wisher of my native land and its prosperity.

I am, your obedient servant,
JOHN YATES.

Colton, near Rugeley, 22nd Jan. 1839.

THE PROPOSED ACT FOR ENCOURAGING THE CULTIVATION OF CONTINENTAL SOILS,

THAT OUR OWN MAY RETURN TO THEIR PRIMITIVE DOWNS.

TO THE EDITOR OF THE COUNTY NEWSPAPER.

SIR,—Some of our editorial farmers have made the discovery, that land lying in a state of nature will at any time be as a national granary of corn ; and that the best way to cripple powers which might be opposed to us is to purchase all the corn they can grow, that their lands, by constant cropping, may be rendered unfit for further grain crops, whilst our own would be fresh for the plough. There are two trifling objections to the practical illustration of this brilliant discovery, which it may be as well for these office farmers to learn. They may be pleased to recollect that an Act for the Commutation of Tithes received the assent of the Legislature some time since, imposing a rent-charge in lieu of tithes—such charge on land they have kindly advised should not be cultivated, but be suffered to lie in grass, being from 4s. to 5s. an acre ; having heretofore, by dint of a large outlay and the rotation of artificial food crops, borne good average crops of grain. We may safely calculate that the feed to be obtained under the novel system of natural grass would not exceed the value of the rent-charge and poor's rates, leaving the owner minus simply his land. Another objection (equally futile with these agricultural projectors) would be that, of the labourers now employed on this arable land—averaging at about three families to every 100 acres—two would be dispensed with in grass land, or ten individuals.

In a parish consisting of 4,000 acres of arable land, 400 would be without employ, until they were (as some of these cool speculators would have us believe) absorbed in the labour of our manufactories. Perhaps such provincial towns as Winchester, Salisbury, Andover, &c., may suffer from the ruin of the landowners and the depopulation of villages. What matter, it must end (say these philanthropists) in national regeneration—or in

revolution, which ? To be serious, Sir, is not the latter their final object ? When it is falsely asserted that 40 to 50 per cent. of tithes and poor rates, in proportion to rental, paid from the produce of our soil (setting aside other taxes, viz., land tax, malt tax, &c., which may be assumed as equivalent to the taxation on land abroad), is no bar to putting that soil into direct competition with foreign productions free from such burthens, and we are advised to throw our own, our native soil out of cultivation, and our experienced and hardy ploughmen out of work, that foreigners may with the money paid to them for corn, in lieu of our own, buy our manufactures, is it not evident of some sinister motive and intent beyond even the wickedness on the face of such proceedings ? Is not that ulterior object the abolition of all taxes, and to defraud the national creditors ? Can we presume any plan more likely to accomplish those objects than that which would impoverish or beggar the entire agricultural population, and which may reasonably be supposed to end only with revolutionizing the country, and the destruction of her institutions ? Hear by what admirable arguments the proposed new system is supported ! “Instead (say they) of the yeomen applying themselves, as formerly, to the study of things connected with their occupation, their vanity has tempted them into aping the habits of fine gentlemen ; so that Hodge and Dobbin, instead of being found at the plough's tail, are roaming the country at the tail of the hounds, or drinking claret and talking dissolutely with the squire.” Again, “Manufacturers say that they are so far from being dependent for their posterity on the home corn growers, that it is a matter of entire indifference to them whether England produces one peck of wheat or not !” Are there respectable people, with two grains of common sense, who can read such false trash as this hireling has dared to pen, with any feelings but of contempt and disgust ? In order to enlist the ignorant on their side, they are assured that, in expending one shilling for bread, they pay threepence to the landlords, forgetting at the same time to inform them, that one half of the landlord's estate is mortgaged (if I may so term it) for the tithes and poor's rates. If they had followed up their remarks on other necessities of life—such as malt, tea, and sugar—they might have discovered that the consumers of those articles are charged from 30 to 150 per cent. to pay the fundholders. But this would not, at present, suit their purpose—it would create alarm where they wish to lull even suspicion, well aware that if their present plan could be carried out to its full extent—if they can obtain one object, the other, the overthrow of the funds, must follow. If we so reduce the value of agricultural produce that the producers shall from necessity fall back on the other taxation of the country, a revolution in every property takes place—we escape the ruinous consequences to those two classes, and benefit by cheap provision and a revolutionary reduction of the debt. This is the real quarry at which they fly their hawk.

The viper is most dangerous when concealed in the grass. A fixed duty on corn could not be persisted in—it is meant as a fraudulent decoy. The landowners and farmers have ever shown themselves to be staunch supporters of honest government. They wish for no revolutionary changes, though it is evident that their properties would benefit were all taxation to cease to-morrow, and the corn trade thrown open to the world. The weak-

est must then go to the wall—that party is the fundholder. By coalescing with the landowner, and securing such a protection from foreign produce on the present principle as may be equal to his extra taxation, they secure their own property; by joining the enemies of the landed interest, they pave the way for their own downfall. The prelude has commenced, we shall see who best survives the after play. I am, Sir, &c.

A FARMER.

THE CORN LAWS.

TO THE RIGHT HON. LORD VISCOUNT MELBOURNE.

MY LORD,—Having, for the last quarter of a century taken an active part in the several discussions on the corn-laws which have been brought before parliament, and more especially in urging on the legislature the adoption of the present principle of protection in lieu of the prohibition of the law of 1815, I venture to address your lordship on the reports we hear on all sides of another alteration. I am the more induced to do so from the circumstance of my having, in 1826-27, urged the adoption of the principle of protection by graduated duties, in opposition to the general opinion of my brother agriculturists, and of having in consequence been at that time considered as a renegade from their interest. It has given me no little satisfaction to have found that my views on the subject have proved to be correct; and, I believe, all those who deprecated the present system, on its first introduction, are now ready to confess that they were mistaken in its effects, and that, using the prophetic words of the late Mr. Canning, on introducing it in the House of Commons on the 28th of February, 1827—“*That if the importation were free, taking security against the inundation of the home market, the supply would be always adequate to the demand.*”

I would ask any one who has looked into the case whether the present corn-laws have not protected us against inundation when we did not want foreign corn? and also whether they have not opened the doors as wide as possible to admit it when we did want it? The only objection that I can conceive to be reasonably urged against the present system is, that the duty takes off *too rapidly*, and that in consequence the importers are induced to keep their corn back, and the revenue loses the duty. I foresaw this when I laid the plan before government in 1826-27; and, therefore, my scale was to take off 1s. or 2s., as the price rose 1s. or 2s. Government, in 1828, naturally wished to have the opinion of merchants on the subject; and by the advice of a most respectable one, whose name carried great weight with it, my scale was altered so as to let the duty, above a certain price, take off *three and four, to one shilling rise in price*. Your lordship will remember, that in the year 1827 the bill was thrown out in the House of Lords, or at least abandoned by Mr. Canning in consequence of an amendment carried there.

In 1828, the Duke of Wellington being Premier, the bill was passed. I took the liberty of writing to his Grace during its passage through parliament, stating my objections to the *too sudden lowering* of the duty, viz., that merchants would be induced to hold by the double motive of *rise in price and fall in duty*, at the time when for the general interest of the consumers it should be brought to market, and that the revenue would thus lose the duty.

The Duke of Wellington, to whom I had not the

honour of being personally known, by return of post acknowledged the receipt of my letter, and expressed his regret that the measure was so far advanced, that it was then too late to alter it. The experience of the last few months has proved the correctness of my views. Had the duty, when above 66s., only lowered 1s. as the price rose 1s., a million quarters of foreign wheat would have come on the market when wanted, *several weeks sooner* than it did, and the revenue would have had at least *half a million* of duty, instead of *fifty thousand pounds*.

I am so well aware of the impossibility of your lordship being able to attend to one-twentieth part of the matters laid before you by private individuals like myself, that I will not attempt to state the different arguments which may be urged in favour of protection to the agriculture of the United Kingdom, but content myself with laying before your lordship a letter written by the late Mr. Huskisson, in 1814, to one of his constituents, to be made public as a vindication of his proposing, *as he then did, the same principle of corn-laws as the present, but which were then overruled*; and in the next year the principle of prohibition up to 80s. per qr. on wheat was adopted. To a letter coming from one who had made himself completely master of the subject, I earnestly entreat your most serious attention. It will repay well for reading, for it contains the gist of the whole question. A few weeks since, at my request, the letter was published in *Bell's Weekly Messenger*, from whence I understand it has been copied into the *Standard and Morning Herald*. Probably your lordship has already read it; but lest it should have escaped your notice, I send a copy, from a conviction that it had better be read *twice than not at all*.

I have no doubt it will be said that Mr. Huskisson was then member for Chichester, but that afterwards, when he became member for Liverpool, his sentiments were different. Let us now see whether this was the case. In 1821 a select committee of the House of Commons was appointed to inquire into the state of agriculture. It is well known that Mr. Huskisson drew up the report of that committee. *He was then member for Liverpool*. What does the report say about the amount of a fixed duty, if parliament should ever propose one? “*That it would be indispensable that such duty should be calculated fairly to countervail the difference of expense, including the ordinary rate of profit at which corn in the present state of this country can be grown and brought to market within the United Kingdom, compared with the expense, including also the ordinary rate of profit, of producing it in any of those countries from whence our principal supplies of foreign corn have usually been drawn, joined to the ordinary charges of conveying it from thence to our market.*”

I would ask, is this any change of sentiment in the late right hon. gentleman? He had been member for Liverpool long enough to obtain from the first merchants there the fullest information on the subject, and what is the conclusion to which he came? That if we had a fixed duty, it must be *an ample one*, or this country would become *habitually dependent on foreign supply for its first necessary of life*, an evil which he so much deprecated.

In 1827 the late Mr. Canning, on introducing the question as to the best mode of agricultural protection, in speaking of a fixed duty, spoke as follows:—“*I have given to the committee the reasons which induce me to think that a fixed duty is not the duty to be adopted—that a fixed duty without reference to variation of price, must at one time be too high, at another too low; and by the very circumstance, that it does not itself vary, while the other quantity*

is perpetually varying, it would be introducing perpetual inequalities. I conceive that a scale of duties which should vary inversely as the price might vary, correcting the excess and catching up the deficiency and tending to their general equalisation, would be that which would carry in itself the best chance of steadiness—a property which is, perhaps, the first thing, perhaps even before occasional cheapness, to be considered in legislation."

In 1828 Lord Glenelg, then Mr. Charles Grant, President of the Board of Trade, again brought forward the question; and in his speech, which is now before me, I see no new view of the subject, except his giving as a reason why a fixed duty sufficiently high to protect our agriculture would be difficult of attainment, viz.—the fact that since the resolutions were brought forward the previous year, 500,000 quarters of foreign wheat had come into our market under the scale of 1822, paying duties of 1*l.* 2*s.* 8*d.* and 1*l.* 4*s.* 8*d.* per quarter.

The alteration made in the resolutions from those proposed the year before by Mr. Canning was, that the pivot, as it was termed, was raised 4*s.* per quarter on wheat, or from 62*s.* to 66*s.*, the duty then to be 20*s.* 8*d.*—the duty to fall to 1*s.* at 73*s.*, in both cases; but in the scale of 1828 as the pivot was higher, the duty was to fall two, three, and four to one shilling rise in price, in order to reach the same price as the lowest duty. As far as regards the two plans, I consider the regular falling, *pari passu*, of the duty inversely with the price, for reasons before stated, preferable. Your lordship will perceive that I have stated the duties according to the imperial measure in both cases; whereas in Mr. Canning's the Winchester measure was taken, which makes the apparent variation. In 1828, Mr. Huskisson, in supporting the present system of graduated duties, said, as appears in a parliamentary report now before me:—"The Right Hon. President of the Board of Trade (Mr. Grant) had stated truly to the house, that it was their duty as practical men to look at the measure of the present session as one which was to settle what the rule and what the law was, by which all the transactions of the country relating to the land were to be regulated. The question was truly one, the final adjustment of which was not merely deeply desirable, but a matter of paramount necessity; for it was one by which all the acts and business of men's lives were influenced and governed. The object, as it appeared to him, of the house should be to pass a measure which men might believe and look upon to be a CONCLUSIVE ONE."

The resolutions were carried through parliament by an overwhelming majority, amounting almost to unanimity; and the agriculturists, who, on the faith placed in the opinion thus expressed, by a man confessedly the best judge of the subject, as between the agricultural, manufacturing, and commercial interests of any man in the empire, have entered into contracts, in which they have embarked their whole capitals, are threatened with a total alteration of the system, amounting to confiscation of their property—a system which has been found to work better for all classes than any other ever tried.

In common with the agriculturists of the kingdom I hailed with joy the manly exposition of your lordship's sentiments last year, as to the working of the present system of corn-laws. Your lordship, in Hansard's Debates, is reported to have said, "That it was far from your intention to introduce any measure for altering the present corn-laws, or for disturbing the system which at present existed. Holding these views, that you certainly would not attempt to alter the system which had been established, nor would you ever introduce any new

system of corn-laws, founded on a different principle from the present, unless a decided opinion was expressed by a large majority of the people. That you believed the system to have operated well, and that it would be dangerous to touch it."

Let me entreat your lordship not to be deceived by the petitions which will no doubt be presented to parliament, numerously signed, for an alteration of the corn-laws. I should not be surprised if, comparatively, petitions were presented by agriculturists, apparently signed by few in number, in favour of them. The agriculturists cannot bring themselves to believe that your lordship has seen anything to alter your mind expressed so lately and so decidedly. I cannot understand the reasoning which would attach weight to merely the numbers of signatures to petitions, except in the minds of those who are advocates for universal suffrage.

The only grounds that I can conceive to be urged against the amount of protection granted in 1828, are, that we have received considerable relief by the Poor-law and Tithe Bills. For bringing forward and passing two such valuable laws, I consider the country deeply indebted to the administration; but allowing a saving of four millions on the poor-rates, of which three would fall to the land, it would not amount to 1*s.* per quarter on the corn grown in England annually. This is saying nothing as to the rise of wages which it is said, and truly, that the measure would effect. And as to the Tithe Commutation Bill, I consider that as a reason why we should increase our cultivation at home, rather than diminish it—saying nothing of the injustice to the owners of tithes, who, on the faith of the present corn-laws, have had their future incomes fixed by that standard.

Since writing the foregoing, I have seen a letter written by Lord John Russell to one of his constituents. Being well aware of the great improvements in agriculture introduced and brought to perfection—remembering also the millions of acres brought into tillage—principally through the patronage and encouragement given to agriculture by the late and present Duke of Bedford, I cannot believe that the son of the one, and nephew of the other, will lend a willing hand in undoing all that these great benefactors to their country have done, and again throw into their original unproductive state those millions of acres which have given food and employment to so large a proportion of our population. In the letter alluded to, Lord John Russell states, as his individual opinion, that experience has shown the present system of duties increase the high prices of dear years to the consumers, and depress the low prices of cheap years to the producers. I am quite at a loss to imagine the ground for the latter opinion. If it is from the fact of the low price of corn for several years, I would remind his lordship, that it was stated by nearly all the members of the last agricultural committee to have arisen from abundant crops, and therefore the Marquis of Chandos obtained no parliamentary relief from it. As to its raising the price to the consumer in dear years, that arises entirely from the duty falling so rapidly. I will not say more than that I am decidedly of opinion, if parliament alter the present system, they will be sacrificing the best interests of the kingdom. If it listens and acts upon the views of the principal movers in getting up the petitions, who would reduce not only the agricultural but the manufacturing labourers to the same wretched condition as those abroad, they will do that which will ruin the agricultural interest without any eventual good to themselves.

If our protection is to depend only on fixed duties, they should be high enough, as stated by Mr. Huskisson, to counteract the difference of expense in raising corn here and abroad. There is no chance of a fixed duty to anything like that amount. Unless we have duties fixed on the principle stated—I would say, abolish your corn-laws altogether. Let us have no half measures, no lingering death, as would be the case with a 10s. or 15s. duty. But with such an act the legislature is bound to pass another, releasing all tenants from engagements entered into on the faith of the present system—all tithe commutations—and, in fact, all understanding by which (as was so well said by Mr. Huskisson) the acts and business of men's lives are influenced and governed.

I have the honour to be
Your lordship's most obedient servant,
JOHN ELLMAN.

Glynde, near Lewes, Jan. 26.

ON SUBSOIL PLOUGHING.

"O fortunatos nimium, sua si bona norint,
Agricolae!"

TO THE EDITOR OF THE NEWCASTLE CHRONICLE.

SIR,—Such of your readers as are interested in the pursuits and improvements of agriculture may recollect, that at the meeting of the Northumberland Agricultural Society, held at Wooler, in October last, a discussion took place, as was reported in your paper, upon the utility of subsoil ploughing, on which subject, opinions somewhat at variance, were expressed by the Marquis of Tweeddale and myself.

There are few men to whose zeal and example the agriculture of the northern parts of the kingdom is more indebted than to those of the noble marquis—few, to whose judgment and practical experience I am inclined to yield a more perfect confidence, and none whom I have been accustomed to meet on such occasions with greater pleasure and advantage. If, then, I ventured at the time referred to, to express opinions in opposition to his, it arose from a strong conviction that his Lordship was in error, not as regarded the subject of his own experiment, but in the application of a general principle, without due consideration for difference of circumstances.

The object of subsoil ploughing, as you must know, is to break up a hard and retentive stratum, often found at the depth of a few inches below the surface, but without mixing it with the soil, by which means it is rendered pervious to water, which being withdrawn from the surface, the land is left in a fit condition for the nourishment and growth of plants which hitherto were apt to be injured by superabundant moisture. This, however, is a very expensive process, as the subsoil plough is an instrument of great strength, and requires four, or frequently six, horses to work it, while two more precede it, turning the surface furrow with a common plough. Lord Tweeddale did not deny the efficacy of the subsoil plough, but condemned its use as unnecessarily expensive, seeing that results equally beneficial might be produced by trench ploughing, which is merely following with a second plough in the furrows which the first has made, but at a greater depth. I also have practised trench ploughing to a considerable extent, and in some cases with good effect; but,

whether the result was beneficial or injurious, depended upon the quality of the subsoil, which, by this process, is brought up and mixed with the surface soil. And my experience leads me to know that some descriptions of subsoil possess properties so pernicious to vegetation that the productive quality of the land with which it has been mixed, has been materially injured for years afterwards, and that it caused diseases in young stock after being restored to grass. This, then, brings me to the point which, at the meeting in question, I endeavoured to enforce—that no general rule can be applicable to all situations and circumstances, and that we are but working in the dark, and often misapplying our means, and wasting our money, till the elements of science shall be brought to bear upon the practice of agriculture, and the qualities of our soils and manures be equally subjected to the test of chemical analysis.

The subsoil in which Lord Tweeddale's experiment of trench ploughing proved successful, was, I presume, devoid of anything injurious to vegetation, and, therefore, after being exposed to the atmosphere, and intermixed with the soil to which it gives a greater body, it became useful, besides that the greater depth of ploughing would render the land drier and more friable. In other districts the subsoil may be not only harmless but beneficial, as in the neighbourhood of Morecamb Bay in Lancashire, where it is mixed with so much shelly and calcareous matter as to operate usefully as a manure, if applied in quantities suited to the character of the soil. But there is a description of subsoil very prevalent in this country, which is neither beneficial nor yet innocuous, but in a high degree pernicious, commonly called *moorband*, a strong ferruginous concretion of gravel and clay which it is difficult to break through; and being perfectly impervious to water, holds all the wet on its surface in rainy seasons, which in drought, being soon exhausted, leaves the crops to languish from want of moisture. I had lately an opportunity of witnessing the operation of the subsoil plough, in the vale of the Till, upon land of this description. The surface soil was light, and easily turned over by a common plough with two horses; that was followed by a subsoil plough, and by the united strength of six strong horses, the moorband was shivered to pieces, but without being brought up, or in any way mixed with the surface soil. The effect was extraordinary: it was a stubble field; in riding over which, before ploughing, the horses' hoofs were scarcely found to make any impression; but on turning to the land that had undergone the operation—woe betide the luckless fox-hunter that encounters such a field, he will find his horse sink to the depth of 18 or 20 inches at every stride, which will soon "take the go out of him." I have procured the analysis of two different portions of this moorband, which is as follows:—

First—120 parts afforded oxide of iron 34, silex 74, alumin or clay 6, water and loss 6=120.

Second—Oxide of iron 43, silex 64, alumin 8, water and loss 5=120.

It is unnecessary to observe that such a combination must be most injurious to vegetation, and therefore pernicious, if brought to the surface; and on this I rest my argument, that the practice which may be good in one case is bad in another; and that to make the progress of agricultural improvement at all commensurate with the rapid advance in manufactures, to which the application of science, in its various branches, has so greatly contributed, more is requisite than the knowledge elicited, or the emulation excited, by our local agricultural associa-

tions. We must call to our aid the principles of science, under the guidance of educated and scientific men: we must test by analysis, and prove by experiment, and endeavour, by the application of suitable manures, to stimulate the productive qualities of our soil, and to correct those that are crude and pernicious; and so look for remuneration for its culture in the abundance of its produce, and not in restrictive regulations affecting its price. A prospectus is now abroad for establishing an agricultural college, connected with an experimental farm, in Kent. It is a laudable and interesting undertaking, and I heartily wish it success; but one naturally asks, is the subject not one of vast national importance, deserving of a national instead of a local institution?

An agricultural society for England has been established under the presidency of Lord Spencer, a nobleman eminently fitted for the office, not merely by the ardour with which he has long pursued, and the great knowledge which he has acquired of agriculture in all its departments, but also by that extraordinary candour and freedom from prejudice which characterize his mind. Would an agricultural college, founded on liberal principles, and on an extensive scale, with able professors in the different branches, not be most appropriately and beneficially connected with such a society, and best managed by a committee of its members, comprising the most intelligent as well as the most influential of the land? I find that I have greatly exceeded the limits which I proposed to myself in beginning this letter, and shall not further encroach upon your paper; but hoping the subject of a National Agricultural College may excite such interest as its importance merits, and meet with more able advocates,

I am, Sir, your obedient servant,
Dilston, Jan. 14, 1839. JOHN GREY.

ON ASSESSING COTTAGES TO POOR RATES.

SIR,—As Parliament did nothing last year to relieve the poor from the demand made on them to pay poor rates, I again offer my suggestions on the subject, believing, taking the times into consideration, that there is scarcely a subject that requires more early attention on the meeting of Parliament. To tax the poor to pay the poor, surely must be most inconsistent. Summonses for payment have been issued in the parish I reside in, and in other neighbouring agricultural parishes, but the tax cannot be collected. My proposition to relieve the indigent poor from paying poor-rates, is as follows:—The occupiers of tenements, with or without garden ground attached, the rent of which does not exceed 4*l.* per annum, to be exempt from paying poor-rates, on their signing, and sending to the overseer of the parish on or before a specified time, a printed declaration, which on their application will be furnished them, that they do not, in any way, pay more than 4*l.* per annum rent; and the owner of the tenement pays all expenses arising from repairs. Poor-rates levied on tenements with or without garden ground attached, the rents of which do exceed 4*l.* per annum, but do not exceed 8*l.* per annum, to be paid by the owners of the property. Above 8*l.* per annum, to be paid by the occupiers. No occupiers of their own freeholds, or copyholds, to be exempt from paying poor rates. The amount to which they are to be assessed to the poor-rates, to be fixed by the overseers and churchwardens of the parish.

I remain, yours, &c., C. HILLYARD.
President of the Northamptonshire Farming and
Grazing Society.

Thorpelands, near Northampton, Jan. 24.

THE CORN LAWS.

A series of propositions from the pen of Mr. PRESTON, of Lee House, written expressly for the use of the landed and agricultural interest:—

1. It is the bounden duty of every Government to give useful employment to the industry of the country by a preference of the labour of its population before the labours of other countries.

2. It is a consequent right of the agricultural labourers to be employed in raising corn and other articles of food, to be used by themselves and their families, and of those individuals who derive their means of subsistence from supplying them with shoes, stockings, and other articles of clothing.

3. The British farmer cannot, by any possible exertion, be a competitor, even in his own domestic markets, with persons employing large capitals in the purchase of foreign corn, and who can turn their capital several times in each year, and will sell as often as they can realize any profit, however small, by the sale of one supply, as the means of obtaining the next supply.

4. The price at which foreign corn can, from time to time, be sold in the British markets will necessarily control and govern the saleable price of British-grown corn.

5. On the principle that supply and demand govern prices, and considering that the principal cities and seaports, and the manufacturing towns to which there is easy access by canals, &c., would be supplied more easily by foreign than home-grown corn, the British grower would be excluded from his best and most extensive markets; the markets which prevent a glut, and depreciation in markets of very limited demand.

6. An importation of corn, free of duty, would so materially reduce the market price of corn that its growth would cease to be profitable, and the quantity of home-grown corn would be greatly reduced.

7. As a consequence, farmers would be ruined, landlords would be distressed, labourers to the extent of an immense number, thrown out of agricultural employment. The money circulation of the country would be greatly diminished, the public credit would be endangered, and the value of money be so changed that, as on a former instance of depression of prices, the mortgagees having lent only half the value of the land, on its security, would be compelled to take to the land itself; and general creditors who could obtain payment would obtain an undue advantage over their debtors.

8. A direct tax on corn, &c. would be a tax on food, and is incompatible with all sound policy and principles of judicious finance.

9. The people would not tolerate a direct tax on food; and if such a tax could be imposed, it could not be enforced at those periods when most wanted; i. e. in times of deficient harvests and short crops.

10. Such duty would enhance the price of corn when deficient domestic harvests had increased the demand for foreign corn and increased its value and price.

11. The existing duty is not a direct tax on corn. It is, in truth and intention, a license to sell corn in the British market when the price of British corn advances beyond limits deemed reasonable for the consumers. It is a protection to the people from high prices, and to the farmer from prices ruinously low, and especially from an unfair competition with the untaxed and untithed produce of foreign countries.

12. A greatly diminished demand for agricultural labour would necessarily increase the supply to manufacturing labour, and add to the distress of labourers in manufacture, by reducing the value of their labour.

13. All experience establishes the fact that the encouragement of British agriculture, so as to render the supply equal to the demand, is the only safe and certain mode of providing food at moderate prices, and with as little fluctuation as seasons and the visitations of Providence will admit, and is the only security, either in peace or war, and especially in war, for avoiding scarcity and even famine prices.

THE CORN LAWS.

TO THE EDITOR OF THE INTELLIGENCER.

SIR,—I am sorry to have to mention a typographical error in that part of my letter which you did me the favour to insert last week. In the report of the commissioners you printed the quantity of cultivated land in Ireland as 10,600,000 acres, whereas it should have been 14,600,000 acres. Having dismissed that part of my letter which was written in self defence, I now proceed to the general business of the meeting.

The highly respectable individual who moved the first resolution asks, are we or are we not more essentially a manufacturing than an agricultural people? Assuming an answer in the affirmative, he proceeds to say—if we are a commercial and not a corn-growing country, and so forth. Now had I been present, with all deference I should have answered—most certainly we are not.

I have shown in that part of this letter, which appeared in your paper of last week, that the property annually created by agriculture is 250 millions, to which I might, had I wished to enlarge the sum, have added 10 millions for wool, hides, and other agricultural productions. This is fifteen times as much as is created by our woollen manufactures, (after deducting raw materials,) and nine times as much as cotton, and more than all our manufactures (excepting agriculture) put together. I can show him, if he will take a ride with me at the proper time next summer, (extending over many thousand acres) such abundant and fine crops of corn and other crops of vegetables, now in cultivation; and such excellent and beautiful sheep, cattle and horses, compared to which the like cannot be found in any other corner of the four quarters of the world; and I can introduce him to farmers so respectable for their property, their talents, and their independence, that he will say, all the learning and all the knowledge is not on the side of the commercial gentry, and I think he will then say we are essentially a corn growing country,—we are essentially an agricultural people.

The number also of the people dependent on agriculture is a very large majority of the whole population; Mr. Cayley, who is no mean authority, said, in his place in the House of Commons last March, “I do not hesitate to affirm, that including the provincial towns and the classes which are employed by the agricultural body, those interested in the welfare and prosperity of the agriculture of Great Britain and Ireland, amount to at least five-sixths of the whole population.” Marshall’s analysis of the occupation of the population of Great Britain, taken from the census of 1831, gives to agriculture 6,300,000; to manufacture 2,400,000. I hope I have, therefore, established my position, that we are not more essentially a manufacturing than an agricultural people.

This gentleman says further, “I believe no other country has risen in importance equally with this.” Certainly there is not, and this importance has been occasioned by the labour, skill, and capital of its people, and if that labour, skill, and capital were removed, its effects would be severely felt. Farm produce is as much a manufacture as broad cloth. A quarter of wheat cannot be produced without labour, skill, and capital, any more than a piece of woollen cloth, and as far as I am able to judge, it matters not to the nation at large whether we cease to produce goods of one kind or of another, to a certain amount, by which there is a corresponding creation of property, whether it be agricultural, woollen, cotton, or hardware; and for which there had been

a ready market either at home or abroad, and by which 10 or 20 millions less is produced, by labour, skill, and capital, and 500,000 or a million of people thrown out of work. Mr. Oliver, a gentleman of high reputation, and not long since a candidate for a Professor’s chair at the University of Edinburgh, states, that for every three million quarters of corn of all kinds, regularly imported, one million of people would be thrown out of bread, and two millions of acres out of cultivation; consequently if three or four months’ supply was imported, say twelve million quarters, four million of labourers would be destitute, and eight million of acres return to waste. The Corn Laws are not the creation of the present season, they have existed in their full force for the 40 years, during which, this importance, so just boasted of by the mover of this resolution, has been achieved. To me, Sir, it is, as sure as anything can be, which has not already happened, that if the Corn Laws happened to be repealed in accordance with the present movement, in less than one-fourth of that time, this importance will be no more, and the greatness of England will be lost for ever; other great nations have fallen by their indiscretion, why may not this? There is at present a duty of 30 to 40 per cent. on the import of foreign silk and linen cloth, of 20 per cent. on cutlery, and all other articles of iron or steel, and of mercery, and 15 per cent. upon worsted and woollen goods. Perhaps we shall be told these branches of our trade would have risen equally without this protection. Surely none but hired lecturers dare to make such an assertion. I say, without fear of contradiction, had no such protective duties as those on worsted and woollen goods existed, the towns of Leeds and Bradford would at this time have occupied a much smaller space than they now occupy. I never heard an agriculturist complain of these impositions, they have been and are as necessary to the prosperity of these trades, as the Corn Laws have been, and are to the successful prosecution of agriculture.

My admiration and applause of the manufacturers and merchants of this country have never been withheld, greatly are we indebted to the first for their ingenuity and perseverance, and to the others for courage and alacrity which have carried our commerce into every habitable part of the globe, nor will I refrain from giving to Master Clodpole and his family the merits due to them who have cultivated the earth with so much spirit and skill as to make two blades of grass to grow where there was but one.

I learn from undoubted authority, that previously to 1800, our average imports of wool did not much exceed 3,000,000lbs. In 1800 our imports amounted to near 9,000,000lbs., and they have since gone on gradually increasing, till in 1834, they amounted to between 25,000,000 and 40,000,000lbs. In 1837, the quantity imported and retained for home consumption was 41,718,514lbs. In 1838, it was 43,148,297lbs., during which time there has been an increase of native wool amounting to 20,000,000lbs., yet there has been no increase of the exports of woollen goods. According to McCulloch, in 1802, the official value of exports of woollen manufactory rose to 7,321,012lbs., being the largest amount they ever reached till 1835, when they amounted to 7,777,952lbs. In 1836, including woollen and worsted yarn, they were 426,408. In 1837, they became 7,671,785. In 1838, it was 4,820,621; this is official value. Now, without taking 1838, the deficiency of which year may be accounted for from particular circumstances which then happened, the amount of our exports of woollen and worsted

goods has been nearly stationary for 30 or 40 years, notwithstanding which an immense increase of the raw material has been somehow or other required; this is an astounding fact, and it is a fact, the truth of which no one can doubt, and to all those who are little acquainted with the demands of Master Clodpole and his family, and of the home trade, it will occasion surprise, but perhaps not conviction, that we ought to support our home trade.

Repeal the Corn Laws, by which the landlords must be content with half their present rents, the regular farmers with less than half their present profits, and the poor husbandmen with half their present wages, and most assuredly there will be no need of this large supply of wool. I break off here again, though the whole of my letter was written on the 21st, as the remaining part will not occupy a larger space than the part I now send you. I hope I may be favoured with a corner of your following paper, and I assure you it is my intention to say no more publicly on this subject for some time to come.—I am, Sir, your obedient servant,

Leeds, Jan. 31, 1839.

JOHN BAKER.

AGRICULTURE.—The following statement of the comparative modes of farming in England and America, is extracted from that amusing publication, *The Clock-maker*:—The bane of this country, Squire, and, indeed, of all America, is havin' too much land; they run over more ground than they can cultivate, and crop the land so severely that they run it out. A very large portion of land in America has been run out by repeated grain crops; and when you add that to land naturally too poor to bear grain, or too broken for cultivation, you will find this great country in a fair way to be ruined. The State of Vermont has nothin' like the exports it used to have; and a plaguy sight of the young folks came down to Boston to hire out as helps. The two Carolinas and Virginia are covered with places that have been given up as ruined, and many other states.—We hav'n't the surplus of wheat and grain we used to have in the U-nited States, and it never will be so plenty again. That's the reason you hear of folk's clearin' land, makin' a farm, and sellin' off again, and goin' further into the bush. They've exhausted it, and find it easier to clear new lands than to restore the old. A great deal of Nova Scotia is run out: and if it war'n't for the lime, marsh-mud, sea-weed, salt sand and what not, they've got here in such quantities, there'd be no cure for it—It takes good farmin' to keep an upland location in order, I tell you, and make it sustain itself. It takes more to fetch a farm too that's had the gizzard taken out of it than it's worth. It actilly frightens me when I think your agriculture in Britain is progressin' and the land better tilled every day, while thousands upon thousands of acres with us are turned into barrens. No traveller as I've seed have noticed this, and our folks are not aware of it themselves to the extent of the evil. Squire, you and I wont live to see it; but, if this awful robbin' of prosperity goes on for another century as it has progressed for the last hundred years, we'll be a nation of paupers. Very little land in America, even of the best will carry more than one crop of wheat arter its cleared afore it wants manure; and where it's cleared so fast, where's the manure to come from, it puzzles me? (and I won't turn my back on any man in the farmin' line;) the Lord knows, for I don't; but if there's a thing that scares me it is this. * * * Yes, too much land is the ruin of us all at this side of the water. Afore I went to England I used to think that the onequal divisions of property there, and the system of landlord and tenant, was a curse to the country; and that there was more dignity and freedom to the individual and more benefit to the nation, for every man to own the land he cultivated, as with us. But I've changed my mind; I see it's

the cause of the high state of cultivation in England, and the prosperity of its agriculture. If the great men had the lands in their own hands there, every now and then an improvident one would skin the soil and run it out; bein' let to others, he can't do it himself, and he takes plaguy good care by his lease his tenant shan't do it neither. Well, then, there he his, with his capital to make great improvements, substantial repairs, and so on, and things are pushed up to perfection."

ON THE EFFECTS OF DRAINING.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—In your very able leading article of last Monday, and in the very interesting report of your East Lothian correspondent, a few inadvertencies have crept in; and as the suggestions on draining will have great weight amongst agriculturists, I trust you will permit me to offer a few observations, arising from a considerable acquaintance with the Scotch system of management.

In the "Mark Lane Express" it is stated, that, land which, with difficulty, had been let at *Five Shillings* per acre, became worth two guineas to the landlord, by the mere operation of draining. This I know to be the act, on many large estates in Scotland. The statement is followed up by a remark, that in many cases, the value of land (or rent) has been increased from 20 to 50 per cent; which remark, however satisfactory in itself, may greatly lessen the just impression conveyed in the first announcement of no less than 800 per cent, and so great a difference might discourage those agriculturists who are not familiar with the subject.

The vast benefit to the farmer need not be enlarged upon, since it must far exceed the relative increase of rent.

It is mentioned in the same moderate tone, that an increase of *twelve bushels* per acre may be counted upon as one result of draining; but, Sir, I can appeal to the principal agriculturists in East Lothian and Ayrshire, (the counties where draining is most advanced,) whether the increase of crop consequent upon that process may not more properly be put at *double*, and even *treble* the previous produce of the land.

On the collateral benefits derived from working well-drained land, instead of such as will not bear the horse's feet but at certain (or rather *uncertain*) times, I shall not dwell:—they will easily be estimated by every farmer.

Your East Lothian correspondent mentions that drain tiles may be expected to be destroyed by frost, if left above ground. The tiles however, which are made by the Marquess of Tweeddale's machinery, are so compact and (so to speak) *metallic*, that they will no more sustain injury from exposure to weather, than if they were formed of hard stone. Instead of merely lasting over a lease of 19 years, the ordinary Scotch term, they will survive as long as the celebrated Roman brick, which seems rather to be strengthened than impaired by the "tooth of time."

I beg leave also to assure your very judicious and intelligent correspondent, that so far from the lower stratum which is dug up in forming a drain, being pernicious, this sort of *till* or "sour clay," has latterly been ascertained to act directly as a manure to the neighbouring ridges, if spread lightly over them.

I cannot conclude these remarks without expressing my cordial concurrence in the patriotic and enlightened views which you have taken as to the National and individual benefits to be derived from the adoption of an universal system of thorough draining. *I am sanguine enough to think that by such adoption, the agricultural interest could afford to forego all the boasted protection of the Corn Laws!*

I am, Sir, your very faithful Servant,
SCOTUS.

18th January.

NEW, QUICK, AND HUMANE METHOD OF SLAUGHTERING ANIMALS.

I take this method of announcing to the public, that I have discovered, and, after a long series of experiments, matured a new, quick, and humane method of slaughtering animals for human food, which promises to be of the greatest benefit to mankind, and for which her Majesty the Queen has been graciously pleased to grant me her royal letters patent.

The physiological principle upon which this discovery is founded, and the existence of which was first ascertained by myself, is, that a power, of great and extensive use to animal life, is derived from the stretch in which the lungs are held both in the living and recently dead animals, in opposition to their elasticity. In consequence of this power existing after death, while the antagonist and controlling power derived from irritability was destroyed with life, the blood, lymphatic and lacteal fluids, are all drained from the arteries and smaller veins of the larger circulation, and from the lymphatics and lacteals into the viscera and blood vessels within the chest, and into the roots of the larger veins approaching to it.

It is impossible, and would be unseasonable, to enter fully into the physiological doctrine in an address of this kind. Such as may wish to be better informed on the subject are referred to a paper of mine, printed in the *Philosophical Transactions* for 1820, on the Elasticity of the Lungs; to another paper of mine, printed in the *Transactions of the Medico-Chirurgical Society of London*, for 1821, on the Vacuity of the Arteries after death; and to the articles Respiration, Motion of the Blood, and Absorption, contained in the second edition of the *Inquiry into the Causes of the Motion of the Blood*, published in the year 1833.

The object of the mode of slaughtering recommended is, to remove the impediments which nature has set up against the elasticity of the lungs, on the existence of which impediments, life, in a great measure, depends, and, of course, to allow the lungs to resiliate into their natural dimensions, or in other words, to collapse, while the animal is still alive.

The method of removing these impediments in the circumstances stated, to break fully and at once what may be considered the mainspring of life, in all animals with elastic lungs, in the most humane manner, has been the object of long and anxious consideration and of much varied experiment. The result has been effectual and conclusive.

The effect of this method of slaughtering is to retain the lymphatic and lacteal fluids, and, indeed all the finer juices of the body, at the same points and in the same proportion in which they existed while the animal was still alive, instead of being accumulated in the large vessels and discharged out of the body in a mass, and becoming a nuisance.

The result is an increase of the edible parts of a carcase to the amount of at least one-tenth beyond that which it would supply by any mode of slaughtering hitherto in use. The meat thus obtained is more juicy, tender, and far better flavoured. It sets sooner, and, of course, is earlier fit for use. It keeps much longer sweet and untainted. This remarkable and important property is evidently derived from none of the vessels being empty so as to admit the external air, and from an oozing of juice or lymph from the full vessels, when any portion is cut, upon the raw surface of that portion, and, by its tenacity, forming a sealing cement. This property is of great

importance to butchers, who lose a great deal of meat in certain states of the weather; to the public in general; but particularly to mariners and to the inhabitants of warm climates.

The time to which this meat will keep in different states of the weather has not been ascertained, for it has always been used before any marks of approaching putrescency have been discovered; but, in the course of last autumn, this meat continued sweet and untainted for many days after other meat, killed at the same time and placed in the same circumstances, had given such proofs of spoiling as to render it necessary to cook it.

The meat, the produce of slaughtering in this mode, is more economical. In the first place, it never shrinks, but, on the contrary, enlarges in cooking; the fat, being supplied with the juices which enrich the muscular or red portion, is much more savoury and is more acceptable to delicate palates, and is, therefore, the less wasted. It requires less time to cook. The centre of a large joint is done nearly as soon as the surface. These properties are derived from the meat being less spongy and a better conductor of heat than meat obtained by any of the modes of slaughtering at present in use. It preserves well and requires a much less quantity of salt. Other valuable properties will present themselves to those who use this meat, and the method in question is also attended with advantageous results affecting hides, skins, &c., upon which it is not necessary now to dilate.

Such of the public as wish to make a trial of what may be called the patent butcher's meat, upon a short notice being given, may be supplied by any of the butchers whose names will be given. Any butcher who wishes to be instructed in the manner of slaughtering may obtain that and any other necessary information appertaining to the patent, by applying to Messrs. Carson, Brothers, the patentee's agents for Liverpool.

I may, I trust, be permitted to state, that the addition of one-tenth, at least, to the edible portion of animals slaughtered for human food, with a high degree of improvement in the quality of the whole, with the property of keeping much longer, and with a diminution of the expense of cooking, as well as less waste in the substance cooked, will not be deemed one of the least important boons which science has, at any period, been found to yield to the exigencies of human life.

The development of a plan by which a great addition of animal food may be said to be, as it were, created, will be considered peculiarly propitious at a time in which the vegetable food of the country is apprehended to be deficient, and, if timeously and extensively embraced, may be the means of preventing, or greatly alleviating, that distress which is always felt in seasons of scarcity.

JAS. CARSON, M.D., F.R.S.

Liverpool, 24th Dec. 1838.

THE NEW POOR LAWS.

From the last report of the Commissioners up to the 25th March, 1837, comparing the results with those of 1834, it appears that a diminution has been effected in the expenditure for the relief of the poor for England and Wales, amounting to 2,702,484l.—nearly three millions of money, which has been left in the pockets of the rate payers!

The total expenditure in 1834 was 7,511,219*l.*, in 1837, 4,808,735*l.*, showing the saving effected to have been at the rate of 36 per cent. Much of the saving appears by the return to have been made under the head of law charges, removals of paupers, and travelling expenses of overseers, items which in the year 1834 amounted to the enormous sum of 258,604*l.* In 1837 the charge under these heads is 126,951*l.* a difference of more than 50 per cent. The population of England and Wales, according to the census of 1831, was 13,897,187. The poor rates, therefore, which in 1834 amounted to more than seven millions, were equivalent to a tax of more than ten shillings a head upon the whole population of the country, men, women, and children.

COUNTIES.	Population in 1831.	Total Expenditure for the Relief of the Poor, Law Charges, &c., and for other purposes in the Years ended 25th March.	
		1834.	1837.
Sussex	272,340	£285,436	£131,364
Bedford	95,483	85,549	39,105
Buckingham	146,529	139,883	69,499
Northampton	179,336	156,613	79,616
Kent.	479,155	406,961	215,499
Leicester	197,003	118,420	63,767
Oxford	152,156	136,752	72,402
Suffolk	296,317	273,030	150,214
Berks	145,389	115,238	61,611
Hertford	143,341	100,043	54,054
Norfolk	390,054	345,644	196,996
Surrey	486,334	341,384	200,040
Huntingdon	53,192	40,958	24,053
Southampton	314,280	232,263	139,242
Wilts	240,156	193,400	114,077
Essex	317,507	270,560	161,035
Middlesex	1,358,330	789,884	543,795
Warwick	336,610	186,186	115,326
Cambridge	143,955	110,485	68,806
Gloucester	387,019	190,147	122,199
Derby	237,170	90,702	61,076
Worcester	211,365	95,982	64,064
Salop	222,938	93,842	63,821
Dorset	159,252	93,927	64,034
Hereford	111,211	64,409	43,439
Lincoln	317,465	195,604	133,767
Rutland	19,385	11,204	6,845
Stafford	410,512	148,235	104,081
Monmouth	98,130	33,039	21,758
Nottingham	225,327	83,834	57,511
Somerset	404,200	204,076	137,938
York, West Riding	976,350	304,932	219,716
Chester	334,391	118,439	85,482
Lancaster	1,336,854	334,069	251,542
Westmorland	55,041	24,830	17,775
York, East Riding	204,253	105,241	76,479
York, North Riding	190,756	86,713	66,644
Cornwall	300,938	109,133	82,705
Cumberland	169,681	50,513	37,588
Durham	253,910	93,811	72,426
Devon	494,478	236,384	174,838
Northumberland	222,912	83,410	66,922
Totals of England	13,091,005	7,181,165	4,533,151
Totals of Wales	806,182	330,054	275,584
Totals of England and Wales	13,897,187	7,511,219	4,808,735

TO THE LANDOWNERS AND OCCUPIERS OF THE COUNTY OF ESSEX.

FRIENDS AND FELLOW FARMERS,—I cannot resist an attempt to awaken you to the danger that threatens and the daily insults that are poured out upon us on the subject of the corn-laws. That you have hitherto been silent, may be the consequence of your contempt for the great majority of anti-corn-law chieftains, who substitute slander and abuse for argument, and who exhibit a degree of virulence and vulgarity that I think is perfectly unrivalled: but, my friends, unhappily there are persons of rank, and station, and character, and great talent in the country, who, in my opinion, are at once the promoters and dupes of free trade theories, and whose influence is justly to be feared. First, the Chancellor of the Exchequer, who, in a letter to his constituents, has passed a sentence of condemnation of the existing corn-laws, and his opinion in favour of free trade, with a small duty. You all know my attachment to the present government founded on political principle, increased by personal regard and sincere and warm friendship for many of the persons composing it. I have particularly felt the highest confidence in Lord John Russell, his integrity, high honour, and good sense; and I think the country owes to the present government a debt of eternal gratitude for their Tithe Commutation and Poor-law Acts; but the opinion expressed by his lordship, and the vote he intends to give on the corn-law question, appear to be at variance with all practical views of the subject, and indeed a most rash and hazardous experiment upon the vital interests of the country, to abandon a system under which agriculture and every interest in the country has flourished for centuries, and to adopt its opposite is a proceeding which we, who have the more solid and closer tie to our country, ought to resist by all legitimate means. I am inclined to think that the best plan will be to send up a petition from every parish in the county, with signatures of names and residence; and their trades or professions should be given, as I trust we shall have nearly as many tradesmen in proportion as agriculturists, aye, and labourers too, for they most of them know that *foreign corn is in effect foreign labour introduced amongst them*; that *AWAY* goes employment at home and down comes wages, that they generally go down faster than the corn markets, the fraud practised on the working classes by the great capitalists and political economists is the grossest and most egregious of any that ever was palmed upon them. I am astonished that they do not see that low wages is their object—is it not avowed? How can any operative feel any certainty that a fall in the price of flour shall be so much more rapid than the declension of the rate of wages—for such it must be to benefit them. Do they not see that the agricultural labourers will by distress themselves flock into the great towns? It is true that comparatively few can turn their hands to manufactures—but some can, and their children can, and in numbers sufficient to depress the demand for labour. It is the very thing that millowners would like; it really does astonish me that they, the working classes, should be the dupes of imposition so audacious, and to the degree of making them an absolute cat's paw, with danger of more seriously burning their fingers than in taking chesnuts out of the fire: they are actually stirring up the working classes to riot in favour of foreign corn, to which many a victim may suffer, but the instigators will take care not to be of the number. I am not easily alarmed, for the English people have

a stamina of good sense which nothing can overcome; but we may suffer much, and I foresee very painful consequences from the possible success of the free trade men on this occasion. If vanquished by such means as have been had recourse to, the landed interest must bid adieu to that salutary influence which they have hitherto possessed in the councils of the nation. Insulted, vilified by the economists and capitalists, slandered in the most unwarranted manner by the licentiousness of a press that dishonours its freedom—we must, I say, fight, and the battle must be won, or make up our minds to sink into utter and irredeemable contempt and insignificance. There is not a moment to be lost.—Believe me, your faithful friend and fellow subject,
WESTERN.

TO THE EDITOR OF THE MORNING HERALD.

SIR,—Perhaps my name, as formerly a conveyancer and barrister in London, and one of her Majesty's counsel, may be known to you. The public also may recollect the part I have taken on the corn-laws in parliament, and especially in the pamphlets addressed to the fundholder, &c., and on the state of agricultural distress, which pamphlets may be found in the *Pamphleteer*.

An examination of the resolutions of the Manchester board of commerce is written, and may be commanded by you or any other public journal advocating the interests of agriculture, &c.

At present I transmit to you a string of propositions in the form of resolutions, which may assist the minds and aid the determinations of meetings convened for the protection of the landed and agricultural interests; and you may publish these propositions (with or without my name, as you may think fit). My object in framing these resolutions is to present to the public eye, in the most simple manner, a correct view of the subject.

1. It is the bounden duty of every government to give useful employment to the industry of the country, by a preference of the labour of its population before the labours of other countries.

2. It is a consequent right of the agricultural labourers to be employed in raising corn and other articles of food, to be used by themselves and their families, and of those individuals who derive their means of subsistence from supplying them with shoes, stockings, and other articles of clothing.

3. The British farmer cannot, by any possible exertion, be a competitor, even in his own domestic markets, with persons employing large capitals in the purchase of foreign corn, and who can turn their capital several times in each year, and will sell as often as they can realise any profit, however small, by the sale of one supply, as the means of obtaining the next supply.

4. The price at which foreign corn can, from time to time, be sold in the British markets will necessarily controul and govern the saleable price of British-grown corn.

5. On the principle that supply and demand govern prices, and considering that the principal cities and sea-ports, and the manufacturing towns to which there is easy access by canals, &c., would be supplied more easily by foreign than home-grown corn, the British grower would be excluded from his best and most extensive markets; the markets which prevent a glut, and depreciation in markets of very limited demand.

6. An importation of corn, free of duty, would so materially reduce the market price of corn that its growth would cease to be profitable, and the quantity of home-grown corn be greatly reduced.

7. As a consequence, farmers would be ruined, landlords would be distressed, labourers to the extent of an immense number, thrown out of agricultural employment. The money circulation of the country would be greatly diminished, the public credit would be endangered, and the value of money be so changed that, as on a former instance of depression of prices, the mortgagees having lent only half the value of the land, on its security, would be compelled to take to the land itself; and general creditors who could obtain payment would obtain an undue advantage over their debtors.

8. A direct tax on corn, &c., would be a tax on food, and is incompatible with all sound policy and principles of judicious finance.

9. The people would not tolerate a direct tax on food; and if such a tax could be imposed it could not be enforced at those periods when most wanted; i. e., in times of deficient harvests and short crops.

10. Such duty would enhance the price of corn when deficient domestic harvests had increased the demand for foreign corn and increased its value and price.

11. The existing duty is not a direct tax on corn. It is, in truth and intention, a license to sell corn in the British market when the price of British corn advances beyond limits deemed reasonable for the consumers. It is a protection to the people from high prices, and to the farmer from prices ruinously low, and especially from an unfair competition with the untaxed and untithed produce of foreign countries.

12. A greatly diminished demand for agricultural labour would necessarily increase the supply to manufacturing labour, and add to the distress of labourers in manufacture, by reducing the value of their labour.

13. All experience establishes the fact that the encouragement of British agriculture, so as to render the supply equal to the demand, is the only safe and certain mode of providing food at moderate prices, and with as little fluctuation as seasons and the visitations of providence will admit, and is the only security, either in peace or war, and especially in war, for avoiding scarcity and even famine prices.

RICHARD PRESTON.

Lee House, Chalmleigh, Jan. 3, 1839.

TITHE ON HOPS.—By order of the Tithe Commissioners, a meeting was held a few days since at Bentley, which adjoins the parish of Farnham, where the "Farnham hop" is grown, and the hop being also extensively cultivated in the former parish, considerable interest was excited. A composition had been received by the tithe-owner during the years 1829 and 1830, and he proposed to give in evidence that the tithes had then been valued at a certain gross sum, for which a larger sum was deducted for rates than was actually paid, and he claimed the full gross sum for those two years; but the assistant-commissioner (Mr. Woolley) ruled that the evidence must, on the present occasion, be confined to the composition received, and the poor-rates actually paid in respect of the tithes, and that the other question must be gone into under a notice to increase the averages. This the tithe-owner said he should forthwith give. For the next five years the

tithes were taken in kind. The tithe-owner produced his accounts of receipts, which showed for the hops an average of 84 cwt. per year for the five years, and an average produce of 561*l.* 6*s.* 6*d.* per annum, or 6*l.* 14*s.* per cwt.; and for the other tithes an average produce of 861*l.* per year for the five years. These accounts, after making a deduction for agistment of after-pasture, which had been rendered by mistake, were admitted by the landowners to be correct. The titheowner proposed to allow 20 per cent. for collecting and marketing the tithes, exclusive of hops, and the landlords demanded 25 per cent. The point was referred by consent to the assistant-commissioner, and he gave his decision in favour of the landowner's demand. Evidence was then given that the expense of collecting, drying, and marketing the hops, including duty, bailiff's expenses, and commission to an agent for selling at Weyhill, was under 30 per cent. The landowners would neither admit or deny this evidence; they contended that the extraordinary charge for hops was not to be arrived at in this manner; that a district must be assigned, and that it must be governed by the average rate of past compositions in that district. The assistant-commissioner observed that the net sum received by the tithe-owner for the hops would be taken into consideration with all other circumstances, and that it was to the interest of the landowners to reduce it by evidence as much as possible; that Bentley was in a peculiar district, and that other places would not govern it; that the commissioners were not at all prepared to say what ought to be the extraordinary charge on this district, and that if the parties could not agree amongst themselves probably it would be a considerable time before the matter could be settled. The tithe-owner offered to allow 30 per cent. for the hops, leaving a net average sum of 392*l.* 9*s.* per annum, which divided by 126, the average number of acres of hops per year during the five years, shewed a return of 3*l.* 2*s.* per acre per annum. The parties could not agree, and the meeting was therefore adjourned for three months. In the course of the inquiry, the assistant-commissioner stated that the ordinary charge would be the same as the ordinary charge on the best wheat land in the parish.

ON PORTABLE MANURES.

"IMPERIAL COMPOST."

In a short article, in your last number, I offered an opinion regarding the nature and operation of bone-dust, which I perceive has attracted some notice; and I wish to follow it up by a few observations on the importance of fixing the attention of agriculturists on the sources from which portable manures of equal value with bone dust may be derived, at less than one-half the present cost of that substance.

That the introduction of bone manure has been of incalculable benefit to this country is undeniable; but, when we consider the enormous sum we pay to foreigners for supplying the constantly increasing demand, it would be well to look at home, to at least lessen this drain on our already too much diminished resources.

The declared value of bones imported in 1821, was, 16,500*l.* In 1831, it increased to 72,000*l.*; and in the returns of 1832, being the last to which I have access, to 92,000*l.* We may fairly conclude,

that during the last seven years, from the prodigious demand for bone dust, the imports have increased in the same proportion—and that we are now paying, at least, 200,000*l.* per annum to foreigners for this article of manure. The late Mr. Huskisson stated in the House of Commons, in 1827, that the sum then expended on bone dust occasioned an additional produce of 500,000 quarters of corn. It is not too much to suppose that the quantity has since been increased four-fold—for the high price of bones has led to a most careful collection of them in every part of the United Kingdom; and although this branch of industry deserves every encouragement at home, it would be for the general interest of the country, and of agriculturists in particular, if substitutes could be provided for the supplies obtained from the continent.

In my former article I stated, that the most active ingredients in bone dust are phosphoric acid and ammonia, combined with lime and carbon; and, that it is to the action of these upon each other, and the influences of the changes of the atmosphere, and of sunshine, and rain, in producing and maintaining that action, both above and in the ground, is to be attributed the extraordinary results attending the application of bone dust.

Now, it appears to me, that a portable manure may be prepared, very easily, and at little expense, in every farm-yard in the kingdom, which shall contain the elements which enrich and stimulate the soil to the highest pitch of fertility.

As follows:—1 ton of turf or peat dust—(if ashes, still better,) 1 cwt. soot. 1 cwt. common or agricultural salt. 1 cwt. quick lime, (reduced to powder.) 14*lbs.* East India saltpetre. (Nitrate of potash.) The ashes, soot, and lime, to be well mixed together. The salt and saltpetre to be dissolved in urine as it may be required to saturate and keep moist the heap. After the salts are expended, urine to be continued—new ashes to be spread on the top to intercept the vapours.

A composition may thus be formed for less than twenty shillings per ton, which, weight for weight, will be as valuable as any bone dust—nay, for general use, for all kinds of crops, or top-dressing, more serviceable. The ingredients in the mass, supply all the elements for which decayed vegetable and animal substances are used, such as alkali and carbon—as recommended by Arthur Young; and oil, by Sir John Sinclair.

In forming ordinary composts, by adding one-tenth of this preparation to farm-yard manure, their fertilizing power and durability in the soil would be doubled. Many years' careful observation on the effects of a variety of portable manures, particularly in alkalis, has led me to these conclusions. The powers of lime, carbon, soda, potash, ammonia, with an infinite variety of these substances in the stomach of mother earth, will produce—*must* on unerring principles, yield life and nourishment to the vegetable kingdom.

The expense may be stated as follows:—

	s.	d.
1 ton of peat-dust, or ashes, taken at..	5	0
1 cwt. of soot	1	0
1 cwt. of lime	2	0
1 cwt. of salt.....	1	6
14 lbs. saltpetre....	5	0
Allow for urine and labour	5	6

£1 0 0

The quantity prepared in this manner for twenty shillings, will certainly go as far for a turnip crop, as 40 bushels of bone dust, which costs from 3*l.* to

47., will prove as efficacious in the first crop, and more lasting and useful in the ground afterwards.

I shall now specify the grounds on which the efficacy of this compost rests in a chemical point of view, that the practical farmer may satisfy himself that he is not led by blind chance, but follows the unerring laws of nature, by adopting what is here offered for his benefit.

The turf dust, or ashes, contain carbonaceous matter, in a fit state to imbibe and retain the active properties of the other ingredients; and serves as a receptacle for the performance of the chemical action of the conflicting substances; until the whole mass becomes impregnated with elastic juices of various kinds, in a highly concentrated state, which are given out gradually, when applied to the soil, according to the influence of the atmosphere, and of sun and rain. The lime imparts the calcareous property essential to all soils in various combinations with acids. The salt and saltpetre yield the mineral and vegetable alkalis united to nitric and muriatic acid, both of which exert a most powerful influence when separated from their bases—which the contact of caustic lime slowly, but certainly effects. The urine, of all sorts, furnishes animal matter, and ammonia in abundance. The soot adds much strength to the carbonaceous matter, and encreases the ammonia.

I think this preparation may justly be termed the "Imperial Compost."

We have all heard of the wonderful effects produced by lime, by salt, by saltpetre, separately applied, under circumstances which have never been satisfactorily described, or accounted for, so as to establish a data to guide to similar results. We have much oftener heard of the application of these three substances to land, without any beneficial effect, but absolutely causing sterility for a time—and the reason for such failures remains in equal obscurity. It is evident, therefore, that instead of separate applications, a combination is advisable to secure a certain benefit without the risk of failure. The grateful soil cannot receive a benefit without returning it in some shape, with more than compound interest.

I address this more to the common sense and experience of practical farmers than to men of science—though I believe my views will bear the examination of the latter class—whose aid is very much required in support of agriculture, which, as a science, is yet in its infancy.—*Irish Farmer's Magazine*.

D. M'C.

Larch-Hill, County Dublin, Jan. 1839.

ON THE CULTURE OF THE POTATO.

By Mr. TOWERS, C. M. H. S.

(From the Quarterly Journal of Agriculture.)

"The subject of the potato culture is yet quite open to the experimenter. Experiment on it by all possible varieties of ways is our advice; and when a sufficiency of facts have been collected, we shall then, and not till then, be warranted in theorizing on the nature of the potato plant." It is neither a loss of time, nor useless repetition, to copy verbatim the closing paragraph of the editorial note, p. 110 of the last number 41; for, by so doing, attention may be rivetted to a very grave subject,

and also to the other papers, in the same number, to which the note refers.

Considering the admonition to experimentize in all possible varieties of ways as most sound advice, I believe that I shall be acting in accordance with it, by entering into a detail of the various methods of culture which I have pursued during a period of eight or more years, and noting down, as far as existing documents permit, the corresponding results. I will premise that, previous to 1830, my practice was regulated by that of ordinary cultivators in the west of Wiltshire, where I then resided; but that subsequently, in consequence of the frequent intercourse by letters with the venerable (late) President of the London Horticultural Society, and of receiving numerous varieties of potato from that gentleman, the product of his own unremitting experiments, I altered my practice, and have met with great success. At the period when the public press was burdened with alarming notices of "failure," I never saw an unhealthy plant, with one most singular exception, which I will, in its place, adduce as such. If this article fail to announce, or give weight to any new and important facts, it will at the least, offer a pledge of what has been, and may again be successfully attempted. The opinions and theory of the lamented president shall be referred to, and thus the reader will be placed in possession of some valuable extracts from original letters, which are by me esteemed very precious relics, for they are now all that remain of one of the most candid, liberal, unselfish minds that ever adorned the world of science.

In the cultivation of the potato, the chief object ought to be the production of the utmost quantity of that mealy substance which constitutes the nutritive property of the root. This substance was formerly called the *farina*, a term which, if referred to qualities resembling those of meal or flour, can by no means be admitted, because of the total absence of that peculiar *gluten* which distinguishes the flour of grain, and qualifies it to undergo the panary fermentation, and become bread. *Amylum* and starch, on the contrary, are correct terms: and with this remarkable substance the potato abounds, but to a greater or less extent, according to the ground in which it grows, and to the routine of culture to which it is subjected.

By the analysis of Einhoff, referred to by Sir H. Davy, in his Agricultural Lectures, the following results were obtained:—

From 7680 parts of potato—	
Of Starch (<i>amylum</i>).....	1153
Fibrous matter, analogous to starch	540
Albumen	107
Mucilage, in a state of saturated solution.	312

2112

Residue, or loss, must have been
worthless fluid=5568

Thus the starch, to the extent of about 1700 parts in 7680, constitutes the chief material of food, because the mucilage in solution, represents only just so much gum-water, and the vegetable albumen can hardly be admitted to be equal to a like quantity of the "white of egg," *animal albumen*.

My own more simple and familiar analysis, described in the "Domestic Gardener's Manual," under the article "*The potato*," gives, from eight pounds of washed, but unpeeled potatoes finely rasped,—

	lb. oz.
Of amylum or starch	1 6
Of pulp, after pressure by hand.....	1 11
Loss in water, or soluble matters.....	4 15

The amylum, whether it exist in the state of powder, or in the form of "*fibrous matter*," is the substance which confers excellence upon the vegetable. Potatoes will grow in any soil, from that of the loosest sand, if it be united with some reduced vegetable matter, to the strongest clays of agriculture; but what is of still greater moment to the subject under consideration,—the produce in amount or quality appears to be materially influenced by local agencies, even in the soils of the same constitution. Thus the sands which bring fine mealy tubers in Somersetshire, fail in other quarters of the kingdom. On this ground only can we account for the discrepancy which we meet with in the papers of the many cultivators who have given publicity to their practice and opinions; one asserting that the light and dry lands bear the best crops, while another maintains, that stiff and clayey soils are most congenial. The operations of soils, therefore, are contingent; and it is proved, almost to a demonstration, that potatoes which are excellent in West Wiltshire, as for example, the varieties there termed the "Early Purple-eyed," and the "Prince's Beauty," became deteriorated in Berkshire, treat them how you may. Lancashire is famed for its varieties, which boil to a meal that crumbles under the fork, and is nearly as white as flour, but the varieties change in the Midland and Southern counties. That soil, and routine of culture, which produces the strongest haulm, and most expansive system of foliage, will yield the greatest bulk of tubers; hence the opinion which we constantly hear expressed, "*that the potatoes run away into haulm*," is a fallacy, because experience proves, what physiology teaches, that the tuber is the product of the foliage, by the quantity and breadth of which its comparative substance is regulated. But experience and facts also demonstrate, that when the foliage is rendered too massive, and the stems become too high, and therefore unable to support the weight of a luxuriantly rank herbage, the tubers, though large in size, numerous, and weighty, are poor in quality, deficient of amylum, and frequently hollow. A *medium growth*, wherein the balance of strength is supported between the stem and the leaves, is the result of a well prepared and healthy soil, reciprocating with the stimulus of the sun's rays, and the decomposing agencies of atmospheric air, and of water. Such a soil will yield sound tubers, be it sandy, light, and easily pulverizable, or unctuous, and adhesive. And on these grounds, quality, *firmness* of texture, and *mealiness*, ought to be the standard, rather than weight of tuber. Thus, in the west, we find the return from the seed sown in the sands, however sound and excellent it may be, is still little more than half what may be, and is produced in the rich loams of Berkshire. In the latter, I have been told, of 700 bushels, of 60 lb. each from the statute acre; whereas I have seen little more than from half to three-fourths of a bushel, dug up from the rod or perch, in the grey sands of Wilts, which is in the proportion of little more than 100 bushels per acre. Mr. Knight has calculated that 1000 bushels, imperial measure, each weighing 80 lb., may be produced; and experiment goes far to shew what *can* be effected. Nevertheless, take one county with another, the utmost average

might perhaps be rated at 300 bushels of ordinary weight, four bushels to the sack. To conclude this view of the old treatment, and its results, it will be only needful to state, that potatoes of the smallest medium size, were cut into sets, each containing from one to three eyes,—the rose, or crown ends being frequently rejected; the sets were then suffered to become dry under a shed; the starch setting and coating the wounded surfaces, and the texture becoming soft and flaccid, in consequence of the emptying of the cellular tissue by evaporation. Could robust growth, or large healthy produce, be reasonably expected to result from treatment so diametrically opposite to sound philosophy? *Disease*, however, is not now contemplated, — *that* perhaps was purely local and epidemic; but it were as rational to expect vigour and strength by the operation of agents purely debilitating, as to hope for great bulk and prolificity from mangled fragments of tubers rendered inert by exhaustion.

My correspondence with Mr. Knight upon the subject of potato-culture commenced in 1831. A letter dated 4th February of that year is now before me, and from it I extract the following connected particulars entire. These I imagine will now prove a source of valuable information to others, as they did to me at the time when I derived the first correct knowledge of that improved culture which must finally, if it be duly appreciated, supercede the old and faulty routine.

"I obtained," says Mr. Knight, "from the *ash-leaved kidney*, last season (a bad one), a produce equal to 670 bushels, of 80 lb. each, per statute acre; and I entertain no doubt of having as many this year. To obtain these vast crops of the ash-leaved kidney, I always plant them *whole*, selecting the *largest* I can raise, and from *very early crops*; those ripened early in the preceding summer are kept dry. I usually plant them upon their *ends*, to stand with the *crown end* upwards, and place them at four inches distance from centre to centre in the rows, and the rows two feet apart, and always pointing from north to south. I plant large potatoes much in the same way, but with wide intervals, according to the height which the stems acquire.

"Thus I plant 'Lankman's potato' (a noted variety, then I believe, the subject of experiment,) "which grows a yard high, six inches distance from centre to centre, and three feet six inches or four feet between the rows; *never cutting any potato*, nor planting one of less weight than a *quarter* but generally *half a pound*. By using such large sets, I get very strong and large plants, with widely extended roots, early in the summer; and I begin working, as it were, with a *four-horse*, instead of a one-horse power. I do not despair of getting 800 bushels of potatoes from an acre of ground, if I live long enough to see the produce of some new varieties which I have formed, and which are of very vigorous growth, whilst they do not expend any thing in blossoms. The *blossoms take away a good deal of sap*, which may be better employed in forming potatoes; and whenever a potato affords seeds freely I think it almost an insuperable objection to it. As a general rule, I think potatoes ought to be planted in rows distant from each other in proportion to the height of the stems; the height of the stems being full three feet, the rows ought to be four feet apart, and the sets (tubers) of the *very largest varieties* planted *whole*, never to be more distant from centre to centre than six inches. By such mode of planting, the greatest quantity of leaf (the organ in which alone the vital nutritive fluid is made) is exposed to the light. I

have this year obtained many seeds of the ash-leaved kidney potato, crossed with another early variety, from which I expect some valuable early varieties, though I scarcely hope to get any thing preferable to the ash-leaved, *if that would not wear out.*"

The foregoing passage may I conceive, be regarded as a compendium of philosophical culture. The extract which follows is from a letter dated 5th July in the same year; it contains interesting observations on the means to accelerate or retard a crop of potatoes. Speaking of the earliest variety, Mr. Knight observed — "The tubers which have ripened early in one season are alone proper to plant for a very early crop; those which have ripened *late*, being not sufficiently *excitable*, though more eligible for a late, or rather moderately early crop, the produce of which will be proper to plant for a very early crop. By attending to these circumstances, and by planting tubers large enough, and near enough in the row, with proper intervals between, according to the height to be attained by the stems, you will be able to obtain much larger crops per acre, than are usually obtained."

As respects the age or condition of seed-tubers, Mr. Knight says—"Potatoes somewhat immature are quite as good for planting in the following year as others; and in some cases, perhaps in many, better; for a particular disease formerly well known under the name of '*curl*,' appeared on plants raised from mature tubers, and not from those raised from immature tubers."

During the years 1830-1-2, Mr. Knight had raised by cross impregnation a great many varieties, fourteen or fifteen of which he sent to me as specimens; they all possessed the characteristic mark of excellence which it was the object of the originator to obtain,—that of *developing no perfect flowers*; the flower-stalk would rise with its germs of blossom, but these would suddenly become yellow and fall off without expanding, consequently the plant had all its energies devoted to the subterranean expansions. Of the enormous yield of several of these varieties I hold by me the written proofs. One which was numbered 4, Mr. Knight states to have produced 23 cwt. 1 qr. 76 lb. per acre.

With these and other facts before me, it was natural that a course of experiments should be immediately instituted; and these have been persisted in with some modifications to the present day. My practice therefore, differs from that of every ordinary cultivator, and its results, which will now be stated, cannot be reckoned unsatisfactory. I have not, however, adhered rigidly to the system of Mr. Knight in planting entire tubers, because it sometimes required more seed-stock than could at all times be conveniently spared. But there are cases which require certain modes of practice, and these ought to be clearly understood by those who cultivate several varieties. A few lines will render this sufficiently clear.

Every county has its own peculiar favourites; and local names are applied which make it difficult to identify varieties. All persons, in England at least, appear to understand and appreciate the qualities of the early *ash-leaved kidney potato*, and therefore I assume it as a standard for the treatment of varieties intended for the earliest summer supply of the table, rejecting as irrelevant to the present inquiry, any reference to artificial excitement, either by frames and glasses, or by warm beds of fermenting materials.

The growth of every plant must imply the pro-

duction of heat, and of this heat there are ample sources to be found in the decomposition of water, and vegetable or animal matter in the ground, by the agency of that enormous volume of the electric elementary fluid, which holds the constituents of those substances in a state of natural union. In planting the ash-leaved kidney, it is my practice to provide for early development and ample security from spring frost, by digging trenches six or eight inches deep and nearly a foot wide, throwing the earth in the form of a ridge on either side of the trenches. Into the soil at the bottom of the trench, three or four inches of half decomposed stable manure, with leaves used for linings, are dug, and then a little light earth if required is raked in, sufficient to leave the surface when settled about four inches below the level of the ground. The ash-leaved potato has very few eyes, therefore it is desirable never to cut it into sets; the potato is pressed into the soil upright, the eyes being uppermost, and the potatoes standing five inches asunder, according to the directions by Mr. Knight. Earth from the ridges is drawn over the crowns to the depth of an inch, and occasionally half an inch of sifted ashes or of light linings' manure is superposed, thus making the first covering an inch and an half deep.

It is the usual method to place the potatoes or sets four or five inches below the surface of level beds, and when the shoots appear to draw earth to the stems. But by the trench planting which may be performed in March or even earlier, the crowns and advancing buds are quite sufficiently protected from the frost, unless it happen to be of very severe character, and then an inch or two of light litter may be lain in the trenches. The great mischief however, which befalls the earliest plots is occasioned by frosts in May. Now the trenches afford protection to the tubers while under ground, and as soon as the shoots are seen above the surface, fine earth is raked or hoed from the ridges so as to cover the first developments. As the shoots advance again more earth is drawn down, till at length the trenches being filled the level of the surface is again produced, and with it a sufficient and ample depth of earth is afforded to the tubers and their fibrous processes. All then that remains to be done is to dig the ground between the rows to the depth of three inches, sufficiently to give freedom and openness of texture. I am averse from ridging and earthing-up as I can see no utility in it, and never once found an additional potato from its adoption. I have seen whole ranks of potatoes blackened by the frost of an hour or two; and even in the present season have been told that great destruction was produced by the frost of the 16th of May. My thermometers gave proofs of at least six degrees, but the potatoes remained safe; and if any persons be inclined to cavil against the practice recommended, I can only in self defence observe, that frost has never hurt me;—my potatoes have lost no shoots, have run their course uninterruptedly, and have evinced neither failure nor disease.

In 1836. March 16 to 19.—Four rows were planted in trenches between single asparagus rows, and about eight feet asunder; they yielded 72½ lb., from 12½ lb. of seed-tubers.

In 1837. March 3 to 7.—Twelve pounds were set in a single trench twenty-four yards long—abreast, and four feet in advance of a wall with an aspect south by east. From this row were dug 72 lb. of excellent flavour. In planting this variety I have never been very particular as to the

direction of the rows, but have planted them widely asunder. The yield has rarely exceeded six times the weight of the seed. There are so few eyes in this potato, that extensive herbage cannot be expected. Indeed on some occasions blanks were observed; yet a progeny of potatoes was found to have been produced, without the protrusion of any superficial herbage. It is however, of great moment to protect the foliage from frost, as soon as it becomes visible, because a shoot lost cannot so readily be re-supplied as it is by other varieties prolific in eyes. I am aware that I have trespassed considerably upon the time of the reader, on a subject not strictly connected with the farm; yet it appeared essential not to overlook the garden varieties, in an article which is designed to furnish a standard of comparison. I pass, however, to the store varieties, without further remark.

WINTER POTATOES.—Such are all that are not digged for use till after Michaelmas, and of these every county—nay, almost every parish—has its own peculiar favourite. Some, however, are in prime condition before, and two months subsequent to Christmas, while others ought not to be cooked till April. I lately cultivated a round potato, which bore the title of Cornish rough-red; it was hard as a cricket-ball, and almost as round, and never started an eye till June, while it remained out of the soil. The pushing of the eyes affords a pretty correct guide as respects the time when a potato is in season, and when it ought to be planted. If during the winter the tubers be kept in a dry cave or pit, where the utmost degree of equable cold can be maintained consistent with the exclusion of actual frost, the quality and flavour will remain more pure than when they are covered by any moist or fermentable material whatsoever. If, under this simple, unexciting treatment, any variety protrude its eyes, that variety is not a *keeper*. This is the only complaint which can be advanced against that truly excellent and widely cultivated potato—

THE EARLY SHAW.—Its skin (*testa*) is of pale buff, covered with a rough, russety membrane; and herein it differs from the *Champion*. Both of these capital varieties possess the defect or vice of blossoming and fruiting copiously; yet they are too finely-flavoured to be rejected. In all countries there are *kidneys*, red, white, or mottled, which possess qualities adapted to soil and atmosphere; but, with the exception of Mr. Knight's crossed seedlings (of which the *Downton Yam* is a fine specimen), I know of none that cast the blossom-buds ere the flowers expand.

All these medium and long keepers are furnished with a number of eyes, distributed over the greater part of the surface, yet abounding most at that end which is opposite to the point where the organic process or funis entered, which supplied the tuber with nutriment derived from the parent stem. The end where the eyes are chiefly congregated is termed the rose, or crown; while that which was connected with the parent is termed the root-end. Many persons reject the former, believing that it produces too much haulm; but the fact is, that, as in the shoot of a tree, if one or two good buds break, they push on, leaving the inferior buds silent and unexcited. Thus, rejecting the root end, it is advantageous to cut a large potato that abounds with eyes, into sets, to comprise not fewer than *two* nor more than *three* eyes, and, in cutting to distribute the crown eyes fairly, as may be, among other eyes situate below them,

by making the cuts in a diagonal direction. I know, by experience, that Mr. Knight acted upon sound and secure principles when he recommended the planting of entire tubers, because he knew well that an ample yield might be assured, one or more of the eyes of each being sure to break. Moreover, in the event of that shoot or shoots being cut off by frost, other eyes till then inactive would be ready to produce successional shoots.

Two facts of importance in physiology now present themselves to our notice:—*First*, All the eyes of entire potatoes do not push at one time, therefore it is a mistake to suppose that a plot becomes crowded by useless haulm if the potatoes be planted whole. *Again*, Persons have imagined that weakness of the root is occasioned by the destructive action of frost upon the earliest shoots: this also is a mistaken notion; for, if any eyes remain unexcited in the tuber under ground, the loss of one shoot is speedily supplied by the substitution of another. Time indeed may, to a certain extent, be sacrificed, but that is all. Of this any one may convince *himself*, by endeavouring to exterminate a straggling potato; he may hoe, or pull off the first shoots, and think his ground cleared of the intruder; but in a week or two the spot will be again occupied, and it will be perceived, that nothing short of the complete removal of the tuber can prove effectual. If *sets*, with one or two eyes, have been planted, and have sent up all their shoots, then the destruction by frost may prove fatal; but it may happen that a shoot shall appear to be killed to the ground, and yet produce a fruitful plant, though late in the season, from embryo eyes seated round the stem, near its point of emersion from the potato.

Since it appears a demonstrable fact, that *whole potatoes* rarely develop all their eyes, it becomes a question of economy whether it be not better to plant *cut sets* of the keeping varieties. Many persons cannot spare a large stock for seed; and in that case it will be prudent to employ sets, with two or three eyes, taking especial precaution to guard the plants from late frosts, and promoting the utmost activity of vegetation by a wise system of culture, the general principles of which are found in the extracts before given from the letters of Mr. Knight.

These principles refer chiefly to the influence of *light* upon the foliage; and it certainly is a fact, that, by making the rows in the direction of north and south, the sun at mid-day shines along the entire line, exerting his greatest power of attraction, in a way which tends to retain the upright position of the haulm. But there are other considerations which refer to *soil* and *nutriment*, and these must be always kept in sight.

The texture of the soil should be naturally free, if possible; but as the desirable medium is not always at command, it will be prudent to set up heavy land in ridges, during the autumn, to expose a great surface to the frost. The manure required should be introduced at the same time, with a quantity of sea-coal ashes, if obtainable. Sand, even in excess, will frequently fail to meliorate heavy, binding earth; but ashes, which contain a large proportion of finely divided siliceous matter, some red oxide of iron, and a little alkali, produce the happiest effects. In alluding to this autumnal preparation, I have a double object in view, dependent upon the habits of the potato. The plant affects a light and moderately enriched soil, wherein its fibrous roots and tuber-bearing processes may wander laterally, but not deeply;

therefore, whether the plough or spade be used, the manure ought to be blended with the earth prior to its being thrown into ridges, that the whole mass may be mellowed by the winter's exposure. Six inches of well laborated earth, over a more solid subsoil, is amply sufficient for the play of the roots, consequently the ridges ought to be raised to the height of twelve inches. After the winter, the soil cannot be too much broken down, nor the manure too intimately incorporated with it; but for these purposes a dry season should be chosen, otherwise the labour of the previous operations will be thrown away, and the main object defeated. I believe that the quality of potatoes is much injured by strong recent manure. Autumnal preparation effects every purpose; the manure is laborated, but not dispersed; it loses rankness, but is brought to the condition of what is fancifully called *humus*, a hydro-carbonous substance, brought to a condition which fits it to supply vegetable aliment when exposed to the decomposing stimulus of the vital principle. *Sands*, however, ought not to be raised into ridges; they decompose manures rapidly, and whatever organic substances are applied to them in autumn should be placed some inches below the surface. It has been shrewdly conjectured, that the straw to be converted to manure ought, as far as is possible, to be brought from land of an opposite quality—thus, if it be intended to meliorate a poor and sandy earth, the farmer should endeavour to obtain his straw from such situations where the staple is a strong or clayey loam. Facts are wanting to establish the implied theory, but it merits investigation.

It was customary, as before observed, to keep the sets till much of the moisture had evaporated, and the substance become flaccid; this drying is perfectly needless, and may prove detrimental. It has been a regular practice with me to plant as wanted, fresh from the knife, row by row; and in order to absorb the moisture which exudes from the divided cellular substance, and at the same time to prevent the attacks of grubs and subterraneous vermin, the set has frequently been dipped in powdered lime, fine ashes, plaster of Paris (gypsum), as conveniently at hand. The lime has been recommended, and certainly no mischief of any kind has resulted from the practice. My potatoes, in garden or field, have always done well, excepting, as I stated, in one solitary instance, of which the following is a faithful narrative:—

A few potatoes, with a dark mulberry-coloured skin, but extremely white pulp, were planted as a trial. From two or three a number was raised sufficient to plant one row, in the spring of 1835. On the same bed, and not four feet distant, another variety was set at the same time, and in the same way. The plants of both rose without failure; but when the purples had attained the height of six inches, the foliage lost the healthy hue,—it first changed to a purplish green, then faded off to a sickly yellow. The ground was hoed, lightened by the spade, and every common means was resorted to, but vegetation could not be stimulated—the plants died, and at the season of digging not a vestige of a potato remained—the destruction was total. As every other variety remained healthy, and yielded fairly, and as the soil appeared in good condition throughout the season, no one existing or traceable circumstance tended in any degree to elucidate the mystery.

I have never seen nor heard of that variety since; and it is just possible, on the theory of Mr.

Knight, that its term of life was come, and *extinction* the consequence.

Entire Potatoes were used by me during two or three seasons subsequent to the receipt of Mr. Knight's specimens, and I selected tubers, of the average weight of *four ounces*, always placing them upright, and regulating the rows, and the distances between the tubers, by the ordinary height of the haulm. As the stems advanced, earth was drawn against them, till at length it formed complete ridges, a foot high on the two sides. Good crops invariably resulted from powerful and healthy growth; but the yield never corresponded with the great bulk of seed-tubers planted, for it averaged about a six-fold proportionate increase. Thus, if 8lbs. were set in a row five yards long, the crop produced would weigh about 48lbs. In 1835 I adopted the practice of planting sets, with the exception of those varieties, early or medium, which are naturally furnished with but few eyes, situated about the crown. I found the yield to be quite equal to that obtained from entire tubers, so that the weight saved was strictly an economy of seed-stock. I believe this remark may be applied even to ash-leaved kidneys, wherein the lower, or root-ends, have very seldom any good eyes; and that of the rose-ends, with an inch of the pulp of the potato below, were cut as sets, two-thirds of the substance of tubers might be saved for the table; but the experiment remains to be tried. From the annexed statement of the plantings and proceeds of 1837, some opinion, however, may be formed on the subject; and if ash-leaved potatoes can thus be economized, a considerable saving of expense will be effected, as the dealers sometimes demand ten or twelve shillings per bushel (often not weighing above 52lb.) for seed potatoes.

EXPERIMENTS OF 1837.

1. A long *medium-early potato*, a variety of kidney, which assumes curious twists, and curvings. The tubers become very large occasionally, but appear to be always of superior quality. This potato is good at any season, from the time of digging in September, to June following. There were planted in trenches 26 lb. of whole potatoes.

12 lb. in the garden between March 30 and April 5.

14 lb. in an orchard plot, April 6 to 8.

The total yield from these 26 lb. was 354 lb.

2. In the orchard, at different dates, between April 8 and 24—

Early Shaws, chiefly cut sets of 4 oz. tubers, two and three eyes, limed; a few 2 oz. whole tubers, were used separately—total 30 lb.

The crop was dugged, November 6.—weighed 520 lb.

3. *Downton Yams*.—(Knight's.) The seed from three or four years succession, in my own garden or field. Cut into two and three eyed sets, 22 lb. 12 oz.

The crop dugged at the same period as the shaws—215 lb.

4. *Early Champions*.—Their first crop, being an exchange with a person whose soil is extremely different from mine. Sets cut by the division of the tubers from the crown to root end, picking out the central eye, and after liming, laying the cut sides downward, so that the broad surface of eyes lay uppermost.

Sown April 20, 13 lb.—Yield in November, 150 lb.

5. A *reddish-brown, white meal-kidney*, which I have reason to believe was originally brought from Wales, by the late Pascoe Greenfell, Esq., new to me at this planting; received from a distance. The eyes are numerous, and pretty equally distributed; therefore the potatoes were divided *transversely*, so that there were crown-end and root-end sets in different rows. The actual comparative result was not, however, ascertained, because the man employed did not notice the

markers at the time of digging, and mixed the whole crop. By this oversight, I am prepared only to state that from 24 lb. of these kidneys I obtained a return of 356 lb.

It is now left to the experience of the reader to determine whether these crops surpass those of common culture; and it remains to observe, that all the early varieties were trench planted, and among those, I include the first variety of kidney, at the head of the list. The keepers (2-5) were planted row by row, during the process of digging, and the rows generally four feet asunder. Thus the ground, which had previously been under *broccoli*, was digged to the extent of five feet; then a line being stretched, a drill-trench was chopped down with the spade, drawing the loosened soil forward, six inches deep. The sets were herein deposited, five or six inches apart, and were covered with earth made very fine and light; then another space was digged, and a second trench struck out and planted. I have, in the present season, made a further improvement, by sprinkling an inch-deep layer of light hot-bed manure, over the surface of the ground which covers the tubers; thus each row is clearly marked, the soil protected and enriched, to the width of a foot, without bringing manure into contact with the potatoes. After a time, when the haulm has become six inches high, the intervening spaces are fork-digged, or the soil otherwise, by hoe or spade, rendered light; the little manure which remains is thus intermixed with the surface, and about two inches of earth is drawn over it, and against the stems on each side; this is all the earthing I allow. The soil remains loose and free at top, over a more solid stratum beneath. This is the actual condition the plots are in at the moment of writing (July 29).

It has been conjectured by many, who have accordingly adopted the practice, that potatoes may be planted year after year in the same land. I have never risked the trial to an extent sufficient to decide the question, and, indeed, the difference of soil would at once throw an obstacle in the way which could not be surmounted; but as far as I have seen, a loam constituted as mine is, does not appear to bring two successive crops of the same potato to a corresponding degree of perfection. It is not to be doubted, that all plants convey into the soil matters either gaseous, fluid, or solid,—for the odour diffused will prove the fact to a demonstration; therefore, without dwelling upon the theory of radical, fecal exudation, or claiming the admission that, by analogy, whatever a plant *throws off from its system cannot become sulubrious food for another of its own species*, it certainly appears reasonable to vary the crops according to the order of rotation, either in the field or garden. I have acted by this principle, and, whenever it has been in my power, have planted one or other of the cabbage family after potatoes.

But in reasoning by the rules of rotation, we must not be led away from particular facts. The tubers of the potato-plant do not appear to derive support from the soil, they being appended to processes which are conduits of supply downward or laterally from the leaves and stem; the sap-fibres which convey the fluids upward are wholly independent of these processes. Just in proportion to the amplitude of foliage, duly exposed to the sun and air, is the bulk of the crop; hence, although manure, or *humus*, becomes decomposed by the action of the proper roots, and is by them conveyed in the form of raw sap to the herbage, the ground does not become impoverished by the potatoes themselves, however numerous they may be, they being organic bodies (*propagines*),

or systems of life,—a congeries of new plants imbedded in a pulpy and amylaceous mass, which has no connection whatever with the soil. Hence, also, as the potato is thus viewed as a product of the leaves, it becomes the recipient of the exudation, which it thus prevents from contaminating the ground to any considerable extent; and thus, upon the theory of fecal exudation, the potato may be planted year after year on the same spot of ground, with comparative *safety*, but by no means advantageously. Little remains to be said. The crops I have produced, and their excellent quality prove, that the rows may stand widely apart, and thus furnish ample space for the horizontal expansion of the radical processes, without causing any diminution of the yield; for what is lost in space one way, is made up by the proximity of the sets in the rows.

The loam (as a staple, naturally) is composed chiefly of a *gritty gravel*, containing a little chalk, more iron, and a moderate portion of alumina—the matter of pure clay; its vice is the condition of the sand, or siliceous constituent, which renders it binding, under the influence of a hot sun, after rain. A perfect loam requires the *silex* to be in a state of minute division. If this fine *silex* abound, even to the extent of five-sixths of the whole bulk, leaving the remaining sixth to be composed of alumina, suboxide of iron, of a light ochre tint, and chalk (*carbonate of lime*), the loam will be rich, unctuous, and of high quality; but if a considerable portion of the *silex* is coarse (the detritus of gravel), the texture of the loam becomes vitiated, and it sets like a brick. Those loams wherein iron exists, in the form of a per-oxide, assume a purple or red tint; they are abundant in Somersetshire, and are the staple of permanent fertility.

Agriculture, or the science of cropping and rotation, will never be duly understood, till the constitution of all loams, and their power of decomposing manures *under the stimulus of the vital, vegetable principle* be accurately determined by experiment.*

ON THE LAW RESPECTING GLANDERED HORSES.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

If I understand the English law, as it is at present constituted, it allows any person to sell any animal laboring under any infectious disease or any number of them, but will punish him if such infected animal should do any mischief to his neighbours' stock, particularly in the above disease as being the most common, and deserving the immediate attention of the legislature.

There are many persons who, if they had a glandered horse would not like it to be known that they sold it, but would employ some jockey fellow who has no character to lose, to dispose of it in some fair or market, thus securing himself from detection if he well fees the scamp who has been his tool. I will

* When Mr. Towers was explaining the character of the *Ægrotis segetum*, in p. 89 of this volume, we expressed a doubt of the insect described being an *Ægrotis*. It is but justice to Mr. Towers to take this opportunity of stating that from the facts which he has since furnished, regarding the character of the insect he described, we are quite satisfied that it is the *Ægrotis segetum*, and no other.—EDITOR.

imagine a case or two:—A gentleman or farmer in a fair sees a pretty showy horse, buys him and puts him in the stable along with others; in two or three months he finds he has glanders in the stable, and half his horses are infected, and then for the first time suspects his “pretty purchase.” These fellows when they have a glandered horse (or as they call him a captain) will turn him in by night where there are some colts, or on a common or moor where it may not be so soon discovered, always selecting a field far away from the farm house, and from whence they may remove it in the morning, and thus they may go 100 miles without being detected; but in case the horse should be taken and pounded, such horse is seldom or ever owned. I have known three instances of the above within these six months, and the evil is greatly increasing at least in the West of England. Let any proprietor of horses only for a moment imagine what mischief a single horse may do, and they will at once see the necessity of an immediate remedy. The English Agricultural Society is the best body to take the matter up, and I have addressed a few hasty lines to them on it, I hope they will at once see the great evil of the case. In France it is different, the horses are all subjected weekly to the inspection of the police, and every suspected horse is seized and examined by a veterinary surgeon appointed for the purpose, and if sound after due trial returned again to its owner, but otherwise destroyed. Only imagine what mischief a single horse may do in one day in a journey of sixty miles, being placed in half a dozen stables on the road; the discharge from the nostril tickles the nose and the first thing the horse, on going into the stable, rubs his nose backwards and forwards on the manger, leaving matter on any splinters that may be there enough to infect a hundred horses, that may rub their noses there and prick themselves with such splinters, for what difference is there between a horse being inoculated with a splinter of wood or lancet, the effect is the same.

I can assure horse proprietors that I have only drawn an every day case, and I should think there is no veterinary surgeon who has been in practice seven years but has often known such cases as I have related. As I have now broken the ice, I hope some one more able will take the subject up, the horse being our servant of business and pleasures, is entitled to our utmost care, and as such demands it from the gentleman, the farmer, and the tradesman.—I am, Sir, your most obedient servant,

S. V. GREGORY.

VETERINARY SURGEON.

Sherborne, Dorset, Jan. 15, 1839.

ON DRAINING.

SIR,—Seeing several accounts in your paper at different times, describing various systems of draining land, and thinking it to be one of the most important subjects in husbandry, I wish to acquaint some of my brother farmers through the medium of your real agricultural paper the plan pursued by most of our best farmers in this neighbourhood, which I have practised several years and find very much the best, combining economy with the best and most lasting drain. The soil is a stiff clay which without draining would be very wet, indeed unable to be

worked in winter at all, and growing very bad crops, but by efficient draining it is made tolerably good land: the plan pursued is this, after opening very deep furrows with the plough from 4 to 7 yards apart ($5\frac{1}{2}$ yards is the most common distance) in whatever direction, the best fall for the water can be got, the labourer digs a drain 20 inches deep, about 16 inches wide at the top, and 12 at the bottom, he then digs 10 inches deeper with a tool not more than $3\frac{1}{2}$ inches wide at the top, and $1\frac{1}{2}$ at the bottom, called a land drain spade, a section of a drain when cut would appear thus:—



Should a bed of stones be met with so that the bottom spit (as we call it) cannot be dug narrow enough, they must be taken out the width of the upper part of the drain, clay then rammed in, and the drain dug as if the clay had been originally there, pieces of turf $3\frac{1}{2}$ inches square, and about 12 or 14 long, are then just placed in the narrow part of the drain; (this turf is dug in the Fenny ground on purpose, but is much like the turf burnt in many places by the poor) a section of the drain after the turf is in would appear thus:—



From the drain being narrowest below they cannot be forced down so as to impede the water, and being a description of earth that will not decay during a man's life; in fact, there is no saying how long they will last, the drain is then filled up with the earth in the common way; the expense varies according to the distance, the turf has to be carried, it is often carted 30 miles and would pay in my opinion for carting much further. The following is the expence 8 miles from the Fen $5\frac{1}{2}$ yards apart.

	Per acre.
	£ s. d.
8 score rods (of $5\frac{1}{2}$ yards) digging and } filling up the drain at 4s. 3d. per score. }	1 14 0
$2\frac{1}{2}$ Thousand turf at 6s. 6d. per thousand.	0 16 3
Carting $2\frac{1}{2}$ Thousand turf 8 miles at 1s. per mile.	0 8 0
	2 18 3

Every mile further costs about 1s. an acre more. Where the land is very wet the extra corn grown the first year after this draining, would pay the expense and the outlay not being so very great most tenants could bear it.

I beg to subscribe myself,

A PLAIN PRACTICAL

Jun. 29.

SOUTH COUNTRY FARMER.

P. S. I shall be happy to give any further particulars in my power should it be requested,

ANSWER TO QUERIES RESPECTING ITALIAN RYE GRASS.

In the year 1836 I purchased one bushel of Italian rye grass, from Mr. T. P. Wilson, of Burgh Quay, Dublin, and sowed it on one Cunningham acre of excellent land, after drilled potatoes, the ground having been sowed with black Tartarian oats the preceding day, this occurred in the third week of April, the field of oats turned out the most luxuriant and productive that had been seen in this country, three Cunningham acres and a-half having produced 440 Winchester bushels of oats; the crop was removed on the 27th September, when the Italian rye grass was seen to rise like a crop of oats about to shoot into ear. The winter of 36 and 37 was not severe, and the Italian (rest of the field was laid down with Pacey's perennial) had a most beautiful appearance at the latter end of July 1837, the crop was cut for seed at that time six feet long, the produce in cleaned seed 48 bushels; there was a great bulk of hay, and had it been saved without regard to the sale of seed would have produced from three to four tons on the acre of sweet, rich, juicy flavour, adapted for black cattle and horses for slow work, admirable for cutting as chaff from the number of joints; it was very full of saccharine matter and substance, but much softer than Pacey's; the second crop was also reserved for seed, and cut in September; it produced about one ton of hay not more than two feet and a-half long, with thirty-two bushels of seed superior to the first crop in quality, making in the whole 80 bushels of seed sold at 10s. per bushel, the original having cost 17s. 6d.; the field was ploughed for wheat, one ridge was left for experiment, the grass on it in November would have cut a third time being two feet long, the winter of 37 and 38 was very severe, the grass melted away, and in my opinion, dissolved and rotted the root; I was very deep in the Italian rye grass, the acre above mentioned having been so profitable, had induced me to lay out eight acres with it, and having observed that the sole thickened and spread by being cropped, I had turned my calves into the fields after the grain was removed; to this circumstance I attribute the great success of my crops in 1838, as some of my neighbours who had not taken this precaution, lost their grass in the same way that my ridge disappeared. Calves are the best stock for this purpose, their teeth are sharp, and they take the top off; for soiling, no grass answers better, it grows so quickly, half a bushel Italian rye grass, 10lbs. of red clover and 4lbs. of trefoil; if the land is stiff, more seed will be required; it is delicate at first in heavy soils, but when rooted, seems to thrive well; half a bushel of Italian, half ditto cocks foot, 7lbs. white clover, 5lbs. trefoil, with 2lbs. of yarrow, make a beautiful sole for pasture, and these succeed each other in bloom, which causes the field to have a varied and beautiful appearance. I have always sowed with spring corn, Tartarian oats is the best crop to lay out grass with, it stands up so well, but both the grass and oats must have rich ground. I have never known the grass to injure the grain crop, it grows up thin, and it is not until the crop is reaped, that you can judge whether you have sufficient roots or not, it spreads so amazingly; certainly the Italian is a biennial and in an irrigated meadow thrives well, and for so far, appears a triennial, and is a most valuable productive grass much relished by cattle. After three years cultivation my objections are, 1st, The difficulty to save as hay from its nature and in a wet season, second crop rises so rapidly, that the ground is always damp, the

hay is of a soft nature. 2nd., In strong lands if dry weather sets in, it sometimes misses and is delicate until it takes root; my plan is to roll the ground, then sow, accompanied by a harrow, which followed immediately and serves as a guide, then the roller when the season permitted this (which does not always happen in this climate); I never was disappointed.

THE CORN LAWS.

SIR,—Agricultural meetings, Christmas shows, and all other information interesting to growers of corn, must now be secondary to the question of "alteration or no alteration" in our present corn laws. Whether they are abolished, or a fixed duty of 10s. be substituted for our present graduated scale, it must cause ruin to landowners, renters on lease, and tenants at will.

Let us consider how the fixed duty would affect the farmer as that is supposed to be the least destructive measure of the two. I believe no one expects we should then realize more on the average than 40s. per qr. for our bread corn. Let us suppose a farmer has obtained a profit of "one rent," on a mixed farm of 300 acres, at 300l. rental, and that on the "fixed duty law" coming into force his landlord reduced him one-third, he of course would immediately lower his labourers in the same proportion; but would his wheelers, his blacksmiths, his collar-makers, and nine out of ten of his other farm expenses be altered in the same ratio? No. Then I am sure I am not deducting too much from his profits when I say he will then only receive 200l. per annum for his 1,800l. capital. If he had a family he could barely bring them up on his previous profit, and with his reduced income I am sure he could not, for would his grocer's, his tailor's, his linen-draper's, and nine out of ten of his household bills be reduced one third? Certainly not. Then what could he do? He could not at a short notice, more especially if he has arrived at the mid-time of life, turn to another business with advantage; and if he could, his capital, instead of being 1,800l., would at the utmost be only 1,200l., but most likely not near so much, as in all probability many of his neighbours would be doing the same. He must leave the land of his fathers for ever to clear the wilds of Australia, or in a few years seek a refuge in his union workhouse.

What would his landlord do? One-third of England they say is mortgaged. Must the mortgagees be our future landed aristocracy? The Jews, the manufacturers, the fundholders? The men who have obtained thousands by looking closely to units? May we expect the same liberality from them as we have experienced from the "old English gentleman," for which he is proverbial? who was born among and grew to manhood with his tenants, who love and respect him as their friend and landlord, who has assisted them in bad times, has rejoiced with them in good ones, and who is anxious for their welfare at all times. How many hundreds of thousands are expended on improvements which repay only in years on land held on the word only of the landlord? Will that continue under the mortgagee proprietor?

What must become of the labourer? His pay would be one third less, but not so his expenses. But would he find employment at all, when all the cold clays, hot gravels, and poor sands are returned to grass and waste, as the reckless demagogues declare they ought to be? No longer would the country towns present the pleasing scenes they now do on a market-day—the shops no longer decked with brilliant coloured goods, to catch the eyes of country women, come to spend their hard-earned savings; but bills "to let" would show how awfully the loss of home trade was retaliating on "the manufacturers for the world."

Brother Farmers,—Let me impress on you the necessity of uniting to a man on this point—our very exist-

ence. Let no difference of politics divide you. In every county, in every parish, copy the good example shown us at Barton, and hold meetings to arrange the best manner of petitioning Parliament immediately on its assembling, to continue to us that protection which is our due. To every name append the number of acres owned or held, that it may be shown the landlords and tenants of all England stand forward for that law which realises the good old motto of "live and let live." Your constant reader, W.

FIRST ANNUAL REPORT OF THE HARLESTON FARMERS' CLUB.

At the annual meeting of the Harleston Farmers' Club, held at the Swan Inn on Friday the 25th January, 1839, C. Etheredge, Esq., in the chair, the following report of the proceedings of the Club, during the past year, was unanimously adopted:—

At the first meeting on the 9th February, "the use of SALTPETRE as a manure," was discussed. It will be in the recollection of those members who were then present, that but little practical evidence of the benefits arising from the use of saltpetre was offered by those who advocated a trial of this manure. Here then was a subject to test, at the very onset, the value of the new society,—for, observed some, of what use can it be to meet and talk about a manure of which those who recommend it have had no experience? We have no hesitation in affirming, that considerable benefit will arise from this our first discussion—for although the advocates of saltpetre could not *from their own knowledge* speak decidedly of its results, yet they produced such authorities in its favour, together with the best information they could obtain, upon the quality of land to which it was most beneficial, the quantity to be applied and the time for applying it, that several members of the club were induced to promise to give it a fair trial; and your committee are enabled to state that at the next discussion of the subject in the ensuing spring, a vast body of practical evidence will be produced, which they have no doubt will fully establish the value of saltpetre as a manure on certain soils.

At the second meeting on the 9th March, two subjects were discussed. The first was "on the use of GYPSUM," and to the debate on this question most of the remarks we have made with regard to that on saltpetre are applicable, with this exception, that whilst the advocates of gypsum relied on other authorities rather than their own practice, strong evidence that it was not suited to many of the soils in this neighbourhood was offered by a member, who had made some experiments with it in the preceding year.

On this subject then we think we cannot do better than quote the report passed at the meeting, and at the same time state that the "further experiments" there recommended, having been since tried by several members of the club, we anticipate that with gypsum, as with saltpetre, a considerable quantity of evidence will be forthcoming when the subject is again discussed; and we here

take the liberty of recommending to those members who introduced these questions last year, to bring them again before the club at an early meeting in the present season, thereby enabling those who may wish to benefit by their experience, to take advantage of it immediately.

REPORT ON GYPSUM.

"A discussion on gypsum having arisen, very strong evidence was produced of the great benefits which it had conferred on clover and other similar crops in some districts, but that it was not suited to all the soils in this neighbourhood was also proved by some experiments tried last year by one of the members of this club. It therefore appears to this meeting that further experiments are necessary to decide whether or not gypsum will prove a beneficial manure in this neighbourhood."

The second subject brought forward was "on the comparative advantages of LIGHT and HEAVY MANURES." On this question a very interesting discussion ensued, embracing a variety of opinions as to the best method of making and applying yard manure so as to preserve all its virtue for the land, unimpaired by too much previous fermentation. The hour for the termination of the meeting having arrived, long before the subject was exhausted, a report was deferred on it till it should have undergone further discussion, and the pressure of other subjects having prevented its being resumed, we can only hope that the introducer of it will take an early opportunity of again bringing it forward.

At the third meeting on the 6th April, one of the most important subjects that has yet engaged the attention of the club was discussed, viz., "on the management and cheapest method of keeping CART HORSES." On this subject, so interesting to every farmer, so much information was given, and the results stated were so various, that it was thought worthy of another evening's debate, and it was accordingly adjourned till the

Fourth meeting on the 4th May, when the subject was resumed, and another interesting discussion ensued. Your committee in common with every member of the club, was astonished to find that amongst a body of farmers all residing within four or five miles of the place of meeting, all consequently using a similar breed of cart horse, and cultivating a similar description of land, such an astonishing difference in the expense of maintaining their cart horses should exist, amounting in authenticated statements to upwards of fifty per cent., whether estimated at per head for each horse, or per acre for the arable land.

What greater proof could be required of the necessity for discussion? and if no other subject had ever been brought before your club, we are of opinion that by debating this question alone, it would have rendered incalculable benefit to the neighbourhood; for what member who now learned for the first time that his neighbour was cultivating his land at much less cost than himself, in one of the heaviest items in a farmer's expenses, but would go home and improve on his former management?

We have not space to enumerate the different methods recommended, but with regard to the expense, we find by reference to the report passed at the close of the debate, that on an average of farms in this district four horses are required for every hundred acres of land, the cost of keeping

which will be about 8s. per head per week during the winter months, to which the discussion was principally confined. We find also a recommendation attached to the report, that it would be advisable to diminish the quantity of hay usually given in this district, substituting an increased allowance of corn. Before dismissing the subject we may state that it was the means of leading to two other very interesting discussions, viz.,—On the advantages of cutting hay into chaff, and—on substituting in the latter a small portion of straw for hay.

The next subject was that of “*SPADE HUSBANDRY*,” and here we had the advantage of having the question introduced by a member who had practised this mode of cultivation very extensively, and whose arguments went strongly to prove its advantage in absorbing all the *surplus* labour of any district.

The result of the discussion was convincing that the substitution, to a certain extent, of the spade for the plough, would have been highly useful under the old poor law system, when it was frequently impossible to find employment for all the labourers in a parish; and there is no doubt that the permanent improvement of the land, by the deep tillage of spade husbandry judiciously applied, would have amply repaid the extra expense of the spade over the plough. But now that the general employment of the labourer would render it difficult to procure a sufficient number of hands to cultivate by the spade, and also the invention of the subsoil plough will enable deep tillage to be obtained at a cheaper rate, spade husbandry will probably never come into general practice,—such appears to have been the opinion of the meeting; the report stating, “that the *surplus labour* of any district may be advantageously employed in spade husbandry.”

At the fifth meeting on the 1st June, another important subject engaged the attention of the club, that of “the best method of improving the breed of *NEAT CATTLE* in this district.” The introducer of this question first showed by a comparison between the value of “homebreds” and other breeds, of similar ages, that improvement was necessary—next by a reference to particular cases that it was attainable; and concluded by giving his opinion, that as it would take a long time to improve our present breed, *keeping it pure* the cheapest and most speedy plan would be to cross the Norfolk and Suffolk cows with Durham or Hereford bulls, giving a preference to the former as likely to produce the best milkers, and also because they can be more easily and cheaply purchased. A long and spirited debate ensued, which was closed by a report agreeing with the views of the introducer; but as there were several staunch advocates for keeping the original breed pure, on the ground of their excellent qualities as milkers, it is probable the question will be again brought forward.

On the same evening another question was introduced, but it was adjourned to the next meeting that time might be allowed on this to take into consideration a circular received from a society, called “The New Central Agricultural Association,” with its “Address to the public,” requesting the co-operation of the different local Agricultural Associations and Clubs. It appearing from the address that the New Central Association was formed for *political* purposes, and such matters being wisely prohibited from the discussions of this club, the following resolution was passed

without discussion.—“That the Harleston Farmers’ Club, adhering strictly to its third rule, (prohibiting all *political* subjects from its discussions) refuses to unite, or in any way to sanction the proceedings of the Farmers’ Central Agricultural Society, which in page 17 of its address, avows ‘that its views are undoubtedly *political*,’ and the projectors of which have publicly stated ‘that they hold the English Agricultural Society to be delusive in principle,’ an opinion from which every member of the Harleston Farmers’ Club dissents; feeling assured that a society formed on the model of the West Highland Society, cannot prove a delusion.”

At the sixth meeting on the 6th July, the subject of “*SHOEING HORSES*,” which had been introduced, and adjourned from the last meeting, was resumed. Much valuable information, with regard to the structure of the horse’s foot, and the best methods of preventing the usual evils arising from bad shoeing, was disseminated amongst the members; and your committee cannot here refrain from congratulating the club on its possessing several medical, chemical, and veterinary gentlemen amongst its members, from all of whom, on many subjects, and particularly the one discussed this evening, they have received great support. The debate, though rendered highly interesting by the union of theoretical and practical knowledge adduced, was, from the nature of the subject, necessarily closed without a report.

The next three meetings, occurring at a season of the year when farmers are engaged in the evening as well as throughout the day, were thinly attended, in anticipation of which no subjects had been fixed upon for debate, but at one of them an interesting discussion arose “On the diseases of *WHEAT*, particularly smut,” introduced by a member who had observed some curious facts regarding the latter, and who promised to institute some experiments on the subject, from which we expect much light will be thrown on this interesting question.

At the tenth meeting on the 26th Oct., the subject of “*STALL-FEEDING*” was brought before the club.—The introducer of this question confined his arguments principally to the advantages of stall-feeding cattle on artificial grasses, such as clover, tares, &c; and as the debate was chiefly confined to the same view of the subject, we cannot do better than quote the report passed at the close of it.

“The subject of the advantages of stall-feeding having been this evening discussed, only so far as relates to the feeding of stock on artificial grasses, the evidence adduced has led to the conclusion, that great advantages result from this system, the most prominent of which, is the facility for producing a greater quantity of manure,—but the advantages of stall feeding off permanent pastures, and soils congenial to the growth of turnips is a question reserved for a future meeting, and the attention of those members interested in this subject, is requested to such facts as may elucidate it in its general scope and bearing.”

Following up the above report, we have great pleasure in announcing, that the subject of “*STALL-feeding and soiling in all its branches*,” is amongst the list of subjects now on the books, for discussion during the present year.

A proposition was this evening made to the society, by the Yoxford Farmer’s Club, that a corresponding committee of the Harleston Club should be formed, which should act with similar committees of the Ashbocking and Yoxford Clubs—that through such committees, the discussions and reports of each club should be open to the other two, and that the

chairman and secretary of each should occasionally meet, (accompanied by any other members who might wish) for the production of the minutes of the proceedings, and of other books which might throw light on the transactions of the three clubs, and also generally to further the views of the resolution.

We congratulate the club on the acceptance of this proposition, considering that it will materially forward the views with which the Harleston Farmer's Club was established, viz., the distribution of knowledge in agricultural affairs.

Eleventh meeting on the 30th Nov., the subject before the meeting this evening, although unfavourable to discussion, was one of great importance, viz. "The best method of keeping FARMING ACCOUNTS."—The introducer, after stating the obvious necessity of farmers keeping accurate accounts of all their transactions, gave to the meeting the heads of that plan which he considered best calculated to effect that purpose. The discussion was not protracted, the subject admitting of but little debate, the remarks generally, were in accordance with the views of the proposer; but it was thought that the matter could not be fully entered into with advantage, unless specimens in writing, of the plan recommended, were laid before the club at some future meeting.

Upon a renewal of the subject, which the importance of it well demands, we anticipate that some concise and yet accurate plan may be suggested, useful to those who have not previously paid much attention to this most important branch of their business. This subject having been dismissed, the club had an opportunity of putting in force the resolution passed at the previous meeting, enabling it to ask for the production of any papers or documents connected with the Yoxford Club,—and having the pleasure, this evening, of the company of the secretary and several members of that club, and knowing that they had lately issued their first annual report, it was produced and read to the meeting. We need scarcely add, that it afforded strong evidence of the utility of such associations, and elicited from the meeting much deserved commendation.

Another subject was also commenced this evening—one of the two formerly alluded to, as arising out of the debate on the keeping of cart horses, viz. "Whether or not, it is beneficial to consume by STOCK, any part of the STRAW the produce of the FARM."—We give the question as proposed; but the introducer confined himself to that part of it relating to the cutting a portion of straw with the hay, as chaff for cart horses. Upon no subject discussed by the club, has greater difference of opinion existed than upon this, and the debate was necessarily adjourned to the twelfth and last meeting on the 28th Dec., when the subject was again resumed with great spirit.—If space permitted, we would willingly extract, from the minutes of the meeting, all the arguments used by those in favour of the proposition, but must content ourselves with giving the substance of the report, which although strongly opposed, was carried in favour of the question, viz.—that notwithstanding the difference of nutriment in any given quantity of straw compared with hay, yet that in the feeding of cart horses, a limited quantity of the former (not exceeding one fifth) may be substituted for the latter with economy and advantage.

The last subject which occupied the attention of the club, was that of "CHAFF-CUTTING". This question like the last, arose out of the debate on "Horse keeping"—it appeared that those persons, who kept their horses for the least money, cut all their fodder; and it was then contended, by those who fed with rack hay, that however apparently economical the

former method, yet that it was not so advantageous to the horse, as he could not extract so much nutriment from the hay cut for him, as when he cut and ground it for himself. To meet this objection, the question was brought forward in its present shape; and we congratulate those members who had the opportunity of hearing the able way in which the subject was introduced; clearly showing, by an anatomical and physiological description of the horse's stomach, and of the processes of swallowing and digesting the food, that the latter, when cut, was equally available for the extraction of its nutriment, as when left for the horse to bruise and masticate.

This being granted, there can be no doubt of the advantage, in all other respects, of feeding with cut food, viz. the prevention of waste, and the saving of time—the latter no slight consideration to horses that work all day, and who thereby gain more opportunity to rest.

A report in accordance with the above views was unanimously carried.

We have thus taken a slight sketch of the subjects which have been brought before the club during the year; and although (as might be expected in the early stages of a society like this) it was impossible, in all, to arrive at satisfactory results, yet in some we have attained that desirable object; and in others, where further experiments or further discussions are wanting, we trust that the ground has been dug and the seed planted, which will in good time bring us fruits worthy our exertions.

In looking back upon this, the first year of our existence, we do so with an unmingled feeling of satisfaction.—If the Harleston Farmer's Club was an experiment when first started, you have proved that it is no longer to be considered as such,—you have at least convinced yourselves, that farmers can meet to talk over subjects more interesting than politics or the weather;—there has, throughout the year been no lack of questions for discussion, and if some of the most interesting have been selected, others of vital importance remain; and so long as those who have greater opportunities of obtaining information, or longer purses to try experiments, will freely impart that information, and cheerfully detail the results of those experiments, so that the successful may be practised, and the unsuccessful shunned—so long as our theory shall be kept in control by practical knowledge, and our practice assisted by theory, and both unite for the permanent improvement of agriculture—so long as the same spirit of mutual forbearance and mutual assistance shall exist amongst our members, as we have witnessed during the last year—so long shall the Harleston Farmers' Club continue to flourish. In enumerating its advantages, let not that be forgotten, of its bringing the large owner and the small occupier frequently together, on a field where the subject is equally interesting to both, and where the total exclusion of every subject connected with *politics*, has removed that rock upon which so many similar associations have been wrecked. In allusion to this subject, we think it high time that the politics should give way to the science of agriculture,—our object is to learn how to make the land produce more; and although deeply sensible of the protection which all native industry requires, we shall yet hail with pleasure the day when agriculture shall be able to protect itself.

We have reserved for the last, but not in our opinion, least important part of our report, the subject of the library attached to the club.—Although, only part of your subscriptions have at present been expended, yet from the liberal donation of several valuable books, and the purchase of others, you have

already the nucleus of a valuable library. In addition to some of the best agricultural works, your funds enable you to take all the periodicals connected with farming, and we need only refer you to your secretary's accounts to prove how eagerly they have been sought for—indeed we hail the circulation of books, as one of the leading features in the formation of your society; and we have no doubt but that the trifling annual subscription of five shillings, enabling a member to command a choice of interesting and valuable reading, has been the means of inducing many persons to enter the club; for, should no benefits arise from our meetings and discussions, here is a decided advantage obtained at a very trifling expence.

When the club was first established, it was thought by many, that the subscription was too small, but the experience of a year has proved it to be amply sufficient; and if any thought it too high, we trust that having seen the benefits derived, they have altered their opinion, particularly when they consider, that from the absence of all forfeits for non-attendance, (an excellent regulation) no other expence is necessarily incurred.

We have examined your secretary's accounts, and find, that the receipts from 105 members, have amounted to 26*l.* 5*s.*, and the disbursements for books to 15*l.* 13*s.* 6*d.*, and for expences to 2*l.* 1*s.* only, leaving a balance in hand of 8*l.* 10*s.* 6*d.*, which, with part of the new income, we recommend to be immediately expended in such books as may be thought desirable.

With regard to the management of your society, as the time is arrived for choosing new officers, we would advise the appointment of a permanent chairman for the year—as you must all have experienced the inconvenience and occasional loss of time in selecting a different chairman for each evening.

We have another recommendation to conclude our report with.—Seeing the spirit of enquiry which exists every where, on all matters connected with agriculture, and the probable institution of experiments relating to the same, we have hailed with satisfaction the formation of "The English Agricultural Society," which by encouraging the former and directing the latter—by collecting and disseminating all the information which every day is now adding to the science of agriculture, must, we think, be productive of immense benefit to the cause we have so much at heart. We have no doubt but these benefits will be greatly increased by the general institution of farmer's clubs similar to our own in connexion with it; and furthering this view, we recommend that the Harleston Farmer's Club be enrolled immediately amongst the subscribers to the English Agricultural Society; and as we observe by its last report, that it is intended to publish a quarterly record of its transactions, to be presented to the subscribers, the members of our club will thus become possessed of those valuable documents—and we shall at the same time mark our wish to support an institution so promising to the best interests of agriculture.

For the committee,

ROBERT B. HARVEY,
SECRETARY.

THE CORN SEPARATOR.

A MOST USEFUL MACHINE FOR SEPARATING THE DIFFERENT QUALITIES OF GRAIN.

GENTLEMEN,—I send you a description of "a separator," manufactured by Mr. Bolster, of Cork, a

machine that every nobleman, gentleman, or even extensive wheat growing farmer, should possess. Its advantages are incalculable, particularly to a seed grower. Mr. B. makes them of all sizes, but that which I would prefer would be six feet long, and diameter of cylinder 16 to 20 inches. The price varying from 5*l.* 10*s.* to 8*l.* 10*s.* being fully 25 to 30 per cent. lower than I ever saw them any where else. To Mr. Bolster is due the merit of the invention.

I have the honour to be, Gentlemen,

Your obedient servant,

EDWARD CARROLL.

This machine is in a cylindrical form with a sheet iron screw running round a drum built on a shaft, which runs through the centre, and on which it works. Over all, or on the outside, is a wire web cover of different sized spaces, over which the feed is carried by the screw, and thereby selected into its different qualities.

There is a circular brush working on springs and regulating screws, on the outside, which prevents any grains from sticking in the wire web, and keeps it perfectly clean. The first of these machines was made by Mr. H. Bolster, of Cork, in the year 1803, when conducting business for Mr. Thomas A. Barnes, when they got very generally into use amongst millers, brewers, and distillers. They can now be had in an improved style and plan at Bolster's Machine and Wire Web Manufactory, 21, Bachelor's Quay, corner of Duncan-street, Cork, who has considerably improved on them since his first making this most useful machine.—*Irish Farmers' Magazine.*

AGRICULTURAL COLLEGES.

(FROM A PAMPHLET BEARING THIS TITLE.)

We should suggest, that a sum of 10,000*l.* be raised by shares of 25*l.* each, as a loan, upon which interest, at the rate of four per cent. should be paid, and that this should be applied to the purpose of purchasing a piece of land of eight or ten acres in extent, and erecting and fitting up upon it buildings suitable for such an establishment as is proposed. This land should adjoin the property of some nobleman or gentleman, who would engage to let to the establishment any number of acres, from 100 to 400, upon a long lease of twenty-one years, at a fair rental.* In any of our large agricultural counties it would not, it is conceived, be difficult to find 200 or 300 children whose parents now pay 25*l.* per annum and upwards for their education, who would be happy to obtain for them the advantages which such an institution would afford, provided they could do so without any larger pecuniary sacrifice than they now make for what is so totally inefficient. Supposing, then, that 250 children entered the school at first, the parents of each of whom paid 25*l.* per annum, this would give an annual income of 6,050*l.* It can be proved that boys can be boarded upon good substantial food, with plenty

* If either there could be raised, or the government would give, a sum sufficient for the purchase of an estate, it would be very desirable. An institution of the public character of that proposed ought not to depend for its efficiency upon the manner in which the neighbouring proprietors of land were disposed with regard to it.

of it, even when food is purchased, for the sum of 15*l.* per annum each. Supposing, then, that this sum be allowed, 3,659*l.* will be applied to maintaining the children. A staff of ten masters would, we should conceive, be requisite for the government of such a school; and we should propose that their salaries should be as follows:—

A head master	£500
Second master	250
Third master or head bailiff	150
Fourth master	100
Six assistants, at 50 <i>l.</i> per annum each ..	300

Making a total, per annum, of . . . £1,300

Supposing the borrowed capital to be 10,000*l.*, 400*l.* would have to be paid annually for interest; 300*l.* per annum might be applied to meeting any unforeseen expenses, and making such additions and changes as circumstances might suggest. This calculation leaves entirely out of consideration all profit to be derived from the cultivation of the farm, which, as it would be cultivated by the pupils, and upon the most approved principles, ought to be very great. This profit, whatever it might be, should first of all be applied to the payment of interest, and afterwards, together with all other surplus, to the admission of the children at as low a rate as possible. When the school shall have been made efficient, this should be the great object to attain; as the greater the number who can be made to participate in the advantages of such an establishment, the more certainly would its effect upon agriculture be generally felt. The sum of 25*l.*, which must necessarily be required in the first instance, would, without doubt, serve to confine the school too much to the higher class of yeomen; but the process of saving, such as has been marked out, together with the gradual increase of numbers and the profits of the farm, would, after a time, reduce the sum required from the parents to 20*l.* or 15*l.*; as, when it is considered that the food will be directly supplied from the land cultivated by the boys, the sum indicated as being required for their maintenance will be deemed too large.

It would not, then, be hard to find the funds for the establishment of such a school as has been proposed, provided that the parents of the children could be made to feel a confidence that the advantages proposed would be really afforded. This confidence, it is conceived, might without difficulty be obtained; and for this purpose it is suggested,—1. That the shares by which the capital is to be raised should be small, say 25*l.* each, so that a large proportion of the yeomanry and farmers might be possessed of them. This arrangement would not prevent those noblemen and gentlemen who were anxious to further the object in view from taking ten or twenty shares, or any number they might please. 2. That the directing committee or council should be chosen out of the shareholders, and that the holder of each share should be entitled to vote at their election.

That constitution would bring the proposed establishment within that denomination of schools called proprietary. These schools have in many instances not been successful, owing, as we have reason to believe, to an indiscreet interference on the part of directors and proprietors in their immediate management. This, as may easily be conceived, is an evil of considerable magnitude, and such a one as no master, fitted for the high office of superintending an establishment of the character proposed, either would or ought to submit to. As this, however, is a known evil, it might be provided against at the first establishment of the association for obtaining the object in view. The utmost discretion should be used in the selection of the head master; but, having selected him, the whole government of the establishment should be vested in him: and for the purpose of effectually giving it to him, he should, it is conceived, have the power of appointing and dismissing the under masters and assistants. Having thus the sole control, the head master would have the entire responsibility, and should annually give an account of his stewardship to the body of shareholders; and, as the committee

would be continually inspecting, they could, in the event of any gross mismanagement, call a special meeting, and oblige him to give an explanation of his conduct at any time. But it is suggested that it would be highly inconvenient to permit any parent or shareholder who chose, to have the power of intermeddling with and obstructing the course which it seemed to the master fit to pursue. The absolute power of the master and the superintendence of a society might thus, it is conceived, be advantageously combined.

It may, however, be desirable that we should state more at length our reasons for placing the appointments of under masters and assistants in the hands of the head master. All societies which have the disposal of good places have a tendency to job. This will be most effectually checked by giving the appointments to a person who is responsible for, and whose character is involved in their efficiency. If the subordinate appointments were to be made by the body of shareholders, numerous inconveniences would arise. Firstly, it would be impossible to fix the responsibility anywhere. Members of the society would then be privately canvassed: and, as it would not be the peculiar business of any one of them to scrutinize the qualifications of the candidates, they would vote in favour of those in whose success they had been interested from other causes than that of fitness. Bad appointments would thus take place: nor would there be any method of securing that when one bad one had been cancelled, the appointment which succeeded it should be any better. Secondly, supposing the greatest anxiety on the part of all the shareholders to make good appointments, no person could be so good a judge of the qualifications which ought to be required as he who, from the circumstance of directing, must be thoroughly acquainted with all the deficiencies of the school; added to which, the head master would have the institution more completely under his control in all its bearings, if the under masters depended upon him solely.

These reasons for not intrusting the appointments to the body of shareholders apply also, although not with equal force, to the committee of management. A divided authority with them would, we think, place the head master in a false position. It is true that the committee would probably attend to the suggestions of the master, but they might not. The utmost direct authority that should be given to the committee in this particular should be that of exercising a veto.

The success of the school will then entirely depend upon the choice of the head master. But who is to choose him? A most important question. Certainly not the body of shareholders, for they might job this all-important situation. The appointment should be made by a number so few that they might be pointed at as responsible for it. The committee of management should, we conceive, perform this duty; but under restrictions as to the class of persons from whom the master should be selected. The body of shareholders, although for the reasons before stated, not those with whom the appointment of the individual should rest, are precisely the persons who can best determine the class from he ought to be selected. And it may be as well to observe, that in order that the institution should, from the period of its foundation, command that respect to which, for the sake of the great object it would be directed to, it is to be desired, that it should obtain,—the head master ought, it is conceived, to be looked up to as a person not only distinguished for those high moral qualifications which are indispensable for the schoolmaster, but also for his scientific acquirements. He should also, it is conceived, be conversant with the application of some department of science to practical purposes.

Although we would thus vest absolute power in the head master for the purpose of enabling him to direct efficiently the studies and employments of the school, we would relieve him entirely from any trouble or responsibility with regard to the pecuniary affairs of the society. These we would place entirely in the hands of the committee and the officer whom they might appoint for the purpose of assisting them."

[We are always anxious to devote our columns to practical subjects, but at the present moment, when the Corn Laws are attracting so much interest, an apology will scarcely be necessary for introducing the following long letter upon that subject. It is not merely important for the arguments which it contains, but will, from the quantity of statistical information on our agriculture, manufactures, and commerce, be found valuable for reference. The political observations are wholly without our province, but it is difficult to erase them.]—Ed.

TO THE RIGHT HON. LORD MELBOURNE, &c. &c.

MY LORD,—The deep interest which the first and the highest official servant of the monarchy of Great Britain must necessarily feel for the prosperity of all the great interests of the United Kingdom, more especially for that greatest and the most stable of all those interests, the agricultural, which in this country, as well as every country under heaven, is the basis of all civilization, national comfort, prosperity, and power and greatness, induce me to trouble your lordship at this time with the following remarks. My purpose is to lay before you, in the shortest possible space, the statements and facts regarding the relative magnitude, and value and importance, of agricultural property and productions, as compared with the manufacturing property and productions; and also the real extent and value of the foreign trade of this country as compared with the extent of trade for the home consumption thereof. The facts to be adduced may be of some service in tending, by the disclosure of truth, to defend the great interests of the country, when, as in the case of the agricultural at present, these are either singly or together assailed by self-interest, clearly ignorant of the facts and bearings of the great question, and at the same time utterly reckless of the consequences which may, which must follow, the adoption of the measures which that self-interest instigates public clamour, not the public voice certainly, so rudely to call for from the executive government and the legislature of this country.

The references and the facts about to be adduced are drawn from the most authentic public sources of information, generally government and parliamentary documents and inquiries. The general statements will stand the strictest scrutiny. The limits to which I am obliged to confine myself prevent me from going into every minute detail on every subject.

AGRICULTURAL PROPERTY.

	Rental.	Value at 30 years purchase.
Great Britain & Ireland, land	£63,395,684	£1,901,870,520*
Do., do., residencies, proprietors, &c.	5,000,000	150,000,000†
Do., do., timber produce yearly	3,000,000	90,000,000
Do., do., land tax, 1834	1,203,578	36,107,340
Do., do., yearly value of tithes	4,841,053	145,231,590
Do., do., poor-rates perpetual charge, exclusive of rent	5,434,890	163,046,700
Do., do., mines, minerals, and fisheries	3,994,031	119,820,930
Property of proprietors †	85,665,658	2,604,077,080

* According to the property-tax schedules, the number of landed proprietors in Great Britain in 1812 was 589,374, of whom 114,778, having incomes assessed under 50*l.* per annum, were exempted from the tax. The number of landed proprietors has since that period certainly increased.

† Par. Ret. No. 53 of 1823 gives the number of houses occupied by landed proprietors in England and Wales, 43,484, and in Scotland 10,820.

‡ Exclusive of the value of the sites of towns and

FARMER'S CAPITAL.

Horses	1,770,544	44,452,865
Black cattle ..	15,400,000	215,600,000
Sheep	53,258,668	66,573,355
Swine	18,270,000	18,270,000
Poultry, rabbits, game, &c.	9,800,000	
Dead stock	102,938,000	
Wages and supplies for only part of the year	197,200,000	654,833,730

Total value of capital in land ... £3,258,910,810

To which vast sum may be added, part, if not all, the capital which the farmers require to purchase household furniture, even at 100*l.* for each establishment; that would amount to 52,000,000*l.*

PRODUCE OF AGRICULTURE.

Grain of all sorts, yearly, wheat at 50s., &c.	£134,000,000
„ Potatoes	20,000,000
Total grains	£154,000,000
Hay, grasses, turnips, straw	£120,300,000
Natural pasture ..	63,502,000
	183,802,000
Butcher meat, from cat- tle, sheep	58,283,759
Do. pigs and pork ..	21,000,000
Poultry, game, rabbits, &c.*	3,500,000
Fisheries, food from ..	12,000,000
	94,783,759
Milk, butter, cheese ..	32,500,000
Vegetables and fruits ..	16,000,000
Allowed for consumption by farmers in some arti- cles not enumerated †	2,500,000
	51,000,000
Wool, British	13,979,166
Hops and seeds	2,000,000
Flax and hemp	2,500,000
Timber	3,000,000
Mines, minerals (coals, &c.)	33,970,276
	55,449,442

Total produce agriculture .. 539,036,201

DIRECT POWER EMPLOYED IN AGRICULTURE.

There are two ways of stating this, producing as to human labour the same result. According to the last census of the population, the families occupied in agriculture stood thus:—

England	761,348
Wales	73,195
Scotland	126,591
Ireland	884,329

Total families .. 1,845,463

This number of families, at 5½ persons to each family, gives 10,040,101 persons, and will give a direct

villages, and the rental of the houses of landed proprietors and others immediately dependent on them in these towns.

* A well-fed hen will produce 240 eggs yearly. Take the average at 200, then allow some for wastage, and 10 per cent. for reproduction. The number of eggs produced in France yearly is 7,380,925,000. The number of eggs imported from Ireland in 1837 (see Irish Railway Report 1838) was about 125,000,000. The number of poultry (dunghill fowls) in France is about 75,000,000. There cannot be fewer in the United Kingdom.

† The tallow produced yearly is 100,000 tons, 4,500,000*l.*; hides 5,500,000*l.* Proportion of these from farmers' consumption remains with them to sell, and some small produce, such as cabbage gardens, &c.

human strength employed in agriculture of 5,500,000 effective men. It may be stated otherwise thus, according to the census tables, &c. :—

Class 1, occupants and other male persons	1,015,111
„ 2 & 3, do. do. labourers, do.	1,464,608
Then 2,480,111 direct female servants, equal to	1,860,083
Farmers' families, and other servants, male and female	1,400,000

Equal to total effective men .. 5,739,802

The classification of the last census gave an apparent and very unfair advantage to the manufacturing branches, as this is in manufacturing arguments and statements brought forward. It classes the remaining families of the population thus—

Families—Trade and manufactures	1,684,232
Do. All other families	1,269,536
Total	2,953,768

But in these classes, and chiefly in the former, there are the following :—

Artificers, builders	650,000
Millers, bakers, butchers	900,000
Tailors, shoemakers, hatters	1,000,000
Shopkeepers	2,100,000
Clergy, legal and medical professions	450,000
Proprietors, annuitants	1,116,390
Paupers	110,000

Total .. 6,406,390

Three-fifths of these and their families most certainly live by agriculture, work for agriculture, and are wholly dependent upon it; leaving of the whole population a much more limited number than is supposed dependent upon and engaged in manufactures, especially for the export manufacturing trade.

SUMMARY OF POWER EMPLOYED IN AGRICULTURE.

Direct human power, effective men	5,500,000
Horses 1,609,176, each equal to 6 men	9,655,068
Oxen 500,000, do. 5 do.	2,500,000

Total effective power direct 17,655,000

CHARGES ON AGRICULTURE.

Direct property, land-lord	£2,141,869,520 at 3 per cent.	£64,256,085
Tithes, property in	145,231,590	4,841,053
Land-tax	36,107,340	1,203,578
Mines, minerals, and fisheries	119,820,930 at 5 per cent.	5,951,046
Farmers' capital in stock, &c.	654,833,730	32,741,686

Total charges on fixed capital 108,993,468

Wages and food for direct labourers	140,000,000
Ditto for indirect labour and supplies	93,000,000
Food for 1,609,178 horses	41,838,628
Ditto 500,000 oxen	6,000,000
	280,838,628

Seed, one-tenth produce grains	15,400,000
Ditto for grasses, fruits, and wastage	2,643,750
Church-rates and highway-rates	2,450,108
Poor-rates, England and Wales	5,434,890
Stipends, clergymen and school-masters, Scotland	300,000
Wages to labourers about	

mines, &c.	7,000,000
Wages to persons engaged in fisheries	9,000,000
	42,228,748
Cost, manure, bone-dust, lime-shells, &c.	5,200,000
Animal manure	59,860,000
Wastage, and replacing live stock	30,295,280
Ditto ditto dead stock	21,560,000
	116,915,280

Charges on agriculture	548,976,104
Deduct last item included in indirect labour, &c.	21,560,000

Total charges on agriculture .. 527,416,104

SUMMARY—AGRICULTURE.

Total produce	£539,036,201
Total charges, rent at 3 per cent.	527,416,104

Farmers' apparent profit £11,620,097

PAYMENT TO POOR-RATES OF ENGLAND AND WALES FOR YEAR ENDING MARCH, 1833.

Land	£5,434,890	7	0
Manorial profits, navigation	183,874	0	0
Dwelling-houses	2,635,257	11	0
Mills and factories	352,472	10	0
	8,606,501	8	0

Payments (neat) to income-tax stood, in 1814-15, thus :—

Land in property, schedules A and B	6,473,475
Tax on houses, occupiers	1,625,933
	8,099,414
Funded property, schedule C	3,004,861
Trade „ D	2,000,000
Professions „ „	1,021,187
	3,021,187
Provincial offices, &c. E	188,932
Naval and military, &c. „	924,312
	1,113,344
Supplementary accounts	80,000
Overplus duties and penalties	7,008
Add fractions	6
	87,014

Total .. 15,325,720

Deduct charges and allowances .. 780,000

Neat produce † .. 14,545,580

According to the Chancellor of the Exchequer (House of Commons, March 6th, 1816), the families engaged in trade, returned under the income-tax, were in number, .. 1,129,049

Only of which number paid .. 156,542

Number who did not pay .. 972,507

The following details of the comparative contributions to the poor rates for one year (say 1823) in some counties in England, is curious, important, and instructive :—

* Exclusive of the quantity dropped on the land yearly. An intelligent proprietor and cultivator in Scotland told me that this amounted to 2½, or nearly 3 tons for each cow.

† The amount paid by Glasgow in 1815 to the income tax was 82,219l. 15s. The brave defenders of their country paid nearly half as much as trade and commerce.

COUNTRIES CHIEFLY TRADING.

	Families Agricul.	Families Trade.	On Land.	On Trade.	Total Charged
			£.	£	£
Lancashire	22723	152271	157790	49375	326477
W. Rid. Yorkshire.	31613	108841	185658	21825	281908
Staffordshire	18235	42425	99715	6021	140257
Warwickshire	16770	30189	89725	9618	139666
Derbyshire	14582	20505	75068	1727	90386
Nottinghamshire ..	13684	21832	57613	2862	81321
Cheshire	18220	27105	89796	5219	117212

COUNTIES CHIEFLY AGRICULTURAL.

Essex	33206	17160	225493	6204	277013
Kent	30169	39130	267917	8258	373786
Lincolnshire	20381	13134	166760	4067	193117
Suffolk	26405	15180	214660	5225	259757
Norfolk	41451	23082	224977	4295	282158
Somersetshire	27472	23732	136481	11993	174582
Northamptonshire.	15285	12400	132002	580	145516
Cornwall	19302	15543	87235	2196	112537
Devon	37037	33935	170412	2623	227421

During the operation of the former poor laws in England, the manufacturer and manual manufacturers in Scotland and Ireland, where there were no poor laws, laboured under the greatest disadvantage. The latter were reduced to starvation wages, especially the hand-loom weavers, while their employers could afford to give them no more. In Scotland, while such were earning only 5s. per week, those in England were receiving double the sum, a moiety from their employers, and assistance equal to as much more from the poor rates. In this way the English agriculturist was to a large extent the manufacturer without any profits from it; and the manufacturers gained so much over their fellow manufacturers and labourers in another portion of the United Kingdom; in fact, the extent of the poor rates paid by agriculturists and others in England, not manufacturers, was an actual bounty on manufactures, and confined to the export trade, which was more especially benefitted by it, equal to 10 per cent. Thus the very interest which is represented as at all times robbing the poor and the labourer, was actually the interest which kept both in comfort, and far superior, indeed, to multitudes of their fellow subjects both in Scotland and in Ireland. How unjust and how wicked, therefore, is it to level against the agricultural interests the false and the cruel charges which are now directed against them. The prosperity of the land is so much connected with the prosperity of commerce and manufactures, that no landed proprietor can ever sanction or seek legislation that is really hostile to these interests.

CAPITAL IN, CHARGES ON, AND PRODUCE OF, MANUFACTURES, 1834.

	Capital and Charges.	Produce.
Cotton manufactures ...	£40,973,872	£52,513,586
Woollen ditto	36,000,000	44,250,000
Linen ditto	12,000,000	15,421,186
Silk ditto	11,000,000	13,425,510
Leather ditto	13,000,000	16,000,000
Hardware & cutlery do.	25,000,000	31,072,600
Copper and brass ditto..	3,600,000	4,673,186
Glass, china, and earthen-ware ditto	8,600,000	10,892,794
Paper, books, colours, furniture, &c.	10,000,000	14,000,000
Spirits, (British), porter, &c.	37,600,000	47,163,847
Sundry smaller manufactures	8,000,000	10,000,000

Total.....£205,773,872 £259,412,709

It is necessary here to observe, that of the raw material requisite for the preceding branches of

manufacture, fully 50,000,000*l.* are the productions of the British soil and immediate British industry.

It is further necessary to observe that the proportion of these manufactures consumed in Great Britain and Ireland, and that which is exported, are as follows:—cotton, two-thirds consumed and one-third exported; woollen, four-fifths consumed and one-fifth exported; linen, ditto, ditto; silk, &c., &c., on an average *nineteen-twentieths* consumed and *one-twentieth* exported.

DIVISION OF CAPITAL, &c., INTO PROPER PARTS.

Branch.	Total Capital.	Capital in Home trade.	Capital in British Possessions trade.	Capital in trade to Foreign Countries
	£	£	£	£
Cotton manufacture.	40973872	27315915	5463182	8194775
Woollen ditto	36000000	28800000	2880000	4320000
Linen ditto	12000000	9600000	960000	1440000
Silk ditto	11000000	10450000	220000	330000
Leather ditto	13000000	12350000	260000	390000
Hardw., cutlery, &c.	25000000	23750080	500000	750000
Copper, brass, &c.	3600000	3420000	72000	108000
Glass, china, &c.	8600000	8170000	172000	258000
Paper, books, colours, &c.	10000000	9500000	200000	300000
Spirits, porter, &c.	37600000	37448361	101092	50547
Sundries	8000000	7600000	160000	240000
Total	205773872	178404276	10988274	16381322

In several of these sums also allotted for capital to foreign countries, the sums so allotted exceed the reality, as a comparison between the amount produced and the value exported will readily testify, to any one who takes the trouble to look into the table of exports to different places in the world. A few selections in proof are subjoined:—

SUNDRY MANUFACTURED ARTICLES.

	Produced.	Exported.
1834, Cotton goods	£52,513,586	£20,513,586
„ Woollen goods	44,250,000	5,736,871
„ Linen goods	15,421,186	2,579,658
„ Silk ditto	13,425,510	637,013
„ Butter and cheese ..	20,500,000	281,881
„ Coals and culm	17,984,887	218,205
„ Iron, hardware, and cutlery	38,170,600	2,869,437
„ Brass and copper ..	4,900,192	961,606
„ Leather	18,000,000	248,302
„ Beer, ale, & spirits.	47,163,847	192,698
„ Cabinet wares, paper, &c.	14,000,000	377,941

Totals 274,186,193 34,617,198

The power employed in the British manufactures, as connected more especially with the foreign trade, will stand thus:—According to the report of the Factory Commissioners (Tab. Rev. and Com., part 4) the total mechanical power, by steam and water, employed in all the cotton, woollen, silk, and flax manufactures in the three kingdoms, was about 72,500 horse-power, equal at six men each power, to 435,000 effective men. About these factories there were employed, males, and females of all ages, 355,373 persons, 50,000 of whom were children. The whole therefore, of this human power, cannot be taken at more than 300,000 effective men. In all these four branches of manufactures there is employed and engaged about them about 2,960,000 persons of all ages additional. The total number of families engaged in every department, strictly speaking manufacturing, is, according to the best and most accurate accounts which can be obtained, 1,500,000 families, or say 8,200,000 persons, one-

half of which may be taken as effective men. This number, with the above-mentioned steam-power, would be, in round numbers, 4,500,000 effective men, or very nearly only *one-fourth* of the effective power which is employed directly in agriculture, while *nine-tenths* of the whole employed in manufactures work exclusively for the agriculturists in Great Britain and Ireland, and their transmarine possessions.

Since 1834 and 1835, the years for which the preceding general tables were constructed, there has been an increase in the cotton as well as in other branches of business. This of course requires additional capital, and which, together with some items in the various branches, more especially those connected with the home consumption trade, which cannot be exactly got at, may give, at the very utmost for all, 12,000,000*l.* additional capital and charges, and say the same extent of additional production. With this addition the capital and produce of agriculture, as contrasted with the capital and produce of manufactures, will stand thus:—

	Capital.	Produce.
Agriculture ..	£3,258,910,810	£539,036,201
Manufactures.	217,773,872	271,412,709

or 15 to 1 in capital, and double in produce, with this further superiority, that in the agricultural capital, it is all fixed and real; whereas in the manufacturing, a considerable portion is made up of wages to be given, and interest on value, buildings, &c.; and, moreover, in the general produce of manufactures there is included a very considerable portion (at least 20,000,000*l.*) for raw material paid to foreign countries, amongst which at the present day and rate of price is probably 15,000,000*l.*, in one article alone, cotton, which goes into the pocket of the agriculturists in foreign parts, the United States chiefly, which states are become almost the sole gainers by the cotton trade.

The exporting manufacturers, more especially those connected with the cotton trade, speak as if theirs was the most important interest in the country, and that, in fact, her revenues, her prosperity, her wealth, and her power, rest in and are dependent upon them alone. The preceding statements will shew the fallacy of this. But these are not all. There yet remain several other important interests, nearly all of them much superior to them—thus:—

	Property.	Gross rental.
Property in houses.....	£604,733,278	£40,929,940
Ships—tonnage, 2,864,493	33,573,032	
Bridges, turnpikes, canals, railroads, docks, &c. &c.	118,000,000	12,000,000
Horses not agricultural..	20,000,000	
Public Funds, Chancery Funds, Loans to various powers	987,474,831	35,000,000

A very large proportion of this is real property, wholly unconnected with manufactures or commercial business; and of the remainder not above *one-third* can belong to that portion of the population which may be technically called the manufacturing; while only *one-tenth* of what remains belongs to, or is connected with the manufacturing trade for foreign nations. The manufacturers for the home market, *nine-tenths* of the whole, are to a great extent dependent upon the interests just alluded to. A large portion also of the above rental of houses belongs to the great agricultural proprietors located in towns. A considerable amount of the value of horses above-mentioned belongs also to them, which draw their splendid equipages along the streets of the metropolis, and consume yearly a very considerable

amount indeed of the value of the agricultural productions which their industrious tenantry raise.

Beside these, there is yet another very important class who carry on the trade which is technically known in the public returns under the name of the “Foreign and Colonial Produce” export department. What this class, and all connected with them, or dependent upon them, are, may be judged of by the amount of the exports for 1837, which were as under:—

Foreign and colonial merchandise exported from Great Britain.....	£13,223,331
Ditto ditto Ireland.....	10,291

Total foreign and colonial .. 13,233,622

This business, and the important class which carries it on, are wholly to that extent unconnected with manufactures. To the extent of 10,000,000*l.* at least of the general imports, must also be their property—thus making their capital more than the capital of the export cotton manufacturers.

The manufacturing interest, therefore, exclusively connected with the trade to foreign countries is, both in capital and production, but a small portion indeed of the component parts of the numbers, the capital, the wealth, the strength, and the producing powers, of this great country. They are readily acknowledged to be important in their place, and equally with other classes entitled to obtain and to require the attention of the government, and the fostering care and protection of the nation; but no more; not protection at the expense of any other interest in the community, and especially at the expense of an interest so immeasurably superior to theirs, and which is, moreover, in fact, the main prop and stay, not only of their manufacturing establishments, but of every other manufacturing establishment and interest in this nation.

The capital, then, which may be called the producing capital, in the whole British trade of every description, and the real capital vested in the strictly speaking foreign trade, will stand as under:—

	British.	Foreign.
Agricultural	£3,258,910,810	
Manufactures.. ..	178,404,276	£16,381,322
Do. for British possessions	10,998,274	
In For. and Col. produce, export	10,000,000	
All other branches above stated	1,163,781,141	
Total	4,626,084,501	16,381,322

COMPARATIVE PRODUCE.

	Home Use, 1834, &c.	Export, 1836.
Agriculture	£539,036,201	
Manufactures	218,044,137	
Do. for British possessions	15,535,566	37,833,006
Imports 1836, less 10,000,000 of it For. and Col. pro- duce exported	47,230,968	
Totals	819,846,872	37,833,006

In noticing the statements made by the anti-corn-law manufacturers on this occasion, the proceedings of the great Manchester convocation require the first notice. The statements which Mr. Johnstone, the deputy from Glasgow, made at that meeting are particularly deserving of notice. This gentleman is an acute and practical manufacturing proprietor, and, connected with that business, no man is better able to give useful and correct information than he is.

Aware of this, and knowing that his statements connected with that business may be relied on, I the more readily bring these under your lordship's review, and appeal to them in proof of the accuracy of my statements and the correctness of the opinions which, from this and other practical information, I have formed on the important subjects now under consideration.

Mr. Johnstone tells us that he is a landed proprietor to the extent of 1000*l.* a-year rental, and also a cotton goods manufacturer, employing, besides machinery, 1700 hands yearly. As a landed proprietor he employs 40 effective labourers on his *few hundred* acres, yielding the rental just stated. His manufacturing establishment throws off 25,000 yards of cotton cloth daily, or 7,800,000 yards per annum, the whole of which he exports; his "concern does not ask Great Britain to purchase a single yard of our production," but sells to "America, Brazil, Cuba, Manilla, Chili, and the like." He adduces the following returns to show how much *more* he, as a manufacturer, pays in taxes than as an agriculturist, leaving it as a matter of course to be supposed and believed that all manufacturing establishments are equally and taxably superior to the agriculturist:—

	£	s.	d.
Duty on 974,400 lb. cotton wool ..	1087	10	0
Ditto on dye stuffs, oils, &c. ..	150	0	0
Ditto on 1200 barrels fine flour, at 20 <i>s.</i>	1200	0	0
Ditto stamp for fire insurance, 85,000 <i>l.</i>	127	10	0
Ditto on marine insurance, 150,000 <i>l.</i> ...	327	10	0
Ditto ditto on returns, 150,000 <i>l.</i> ..	375	0	0
Ditto on bills of exchange ..	100	0	0
Total ..	3367	10	0

Adding that on taxable objects, such as tea, sugar, spirits, &c., each of his 1700 hands pay in taxes yearly 3*l.* each. Mr. Johnstone of course means that the adults or effective hands consume this, not the children, or boys and girls under 15 years of age, of which there are no doubt a few. The number may be reduced to 1557 effective hands as the correct tax-payers at the rate, and in the way, alluded to.* Each of his 40 effective agricultural labourers pay in taxes also 3*l.* on tea, sugar, &c.

Now let us attend to this valuable data. The whole goods are exported, and consequently all the preceding duties are charged on the foreign consumer. Now it is contended that it is wise policy, and in any nation, to get as much as possible of its taxation paid by foreign countries as it fairly and honestly can. Next Mr. Johnstone paid for his estate, it is stated, 31,000*l.* (the grain and pasture lands in Great Britain and Ireland, purchased at the same ratio, would be worth 5,000,000,000*l.*!!) Deducting therefrom the assessed and land taxes, together 50*l.*, which Mr. J. admits he pays as an agricultural proprietor, and also the stipends to the parochial clergyman and schoolmaster, overlooked, it is presumed, it is obvious that Mr. Johnstone as a landed proprietor gets about three per cent. for his money—the exact sum other data show to be the general return for the kingdom. Situated on the banks of the Clyde, and within a few miles of Glasgow, and where the land is very fine, it is obvious, that Mr. Johnstone's property must possess great advantages over agricultural estates in general, and can be worked with fewer hands than the general average. At any rate Mr. Johnstone must add

himself and his family to his 40 servants; say making out 45 effective persons to the rental of 1000*l.* a-year. Now at the same ratio for the rental of Great Britain and Ireland (exclusive of mines, minerals &c.) 81,671,627*l.* the number of effective labourers will be 3,675,195; and at 3*l.* each the taxes which they pay yearly 10,025,585*l.*; but the real number being 5,500,000, consequently the taxes paid by the direct agricultural labourers or cultivators are 16,500,000*l.*, even by the scale allowed by Mr. Johnstone.

With 1557 effective hands that gentleman produces and exports 7,800,000 yards of cotton goods yearly. The total number of yards exported in 1836 was 637,667,627, which at the same ratio would require 127,276 effective hands. The taxes paid by each of these at 3*l.* will amount to 381,828*l.*; and calculating the hands employed in all the branches of the export trade at the same ratio, the amount of taxes so paid by the hands engaged in them, exclusive of machinery, which pays no taxes, would be 1,185,905*l.*; for if 17,183,167*l.* the value of the cotton goods in yards exported, produce 381,828*l.*, the total exports 53,368,571*l.* will produce the sum stated, 1,185,905*l.*, while the agricultural cultivators produce 16,500,000*l.* Again, there is fire insurance duty paid on 85,000*l.* yearly. This may be assumed to be not only the value of buildings and machinery, but to a certain extent for stock in hand also. Now if this sum covers these things on 7,800,000 yards yearly, 6,948,942*l.* will cover the whole of the same items in the total production of 637,667,627 yards; one-fourth of which sum also may be deducted as the value of the stock on hand, leaving 5,186,705*l.* as the capital really vested in buildings and machinery for the whole cotton cloth export trade of this country, according to Mr. Johnstone.

The Customs returns give us the following facts with regard to the state of the cotton export trade:—

	Official value.	Declared value.
1820 exported ..	..	£16,517,748
1832 do. ..	£43,230,921	20,854,243
1836 do. ..	58,491,731	24,632,088

The same tables give in quantity as under:—

COTTON GOODS EXPORTED.

	Yards.	Value.	Twist—lb.	Value.
1820 .	248,370,630	£13,153,529	23,032,325	£2,826,639
1828 .	363,328,431	12,483,249	50,505,751	3,595,405
1836 .	637,667,627	17,183,167	88,191,046	6,120,366

Where then is the decrease complained of? In 1837 the export of cotton twist rose to upwards of 100,000,000 lb., and last year it has been 115,000,000 lb. The difference in value between the official scale and the declared value stands thus very conspicuous, and also very ridiculous. So long as it would suit a purpose—so long as any particular or accounted minor interest, such as the shipping and the colonial, were to be beat down by a comparison of the magnitude and importance of their produce with the manufacturing, so long the official scale, the bitterest delusion ever practised upon any country, was resorted to by the manufacturers; but now that a similar object is sought against other interests, that scale is thrown aside and the declared value is resorted to in order to show a declining trade; but neither does this scale show this but the contrary. The official scale as regards the cotton trade in particular is this—the Customs value every yard exported at the following rates:—*

* The proportion under that age in power-loom establishments in Glasgow in 1832 was 365 out of 4323. (Tab. Rev. and Com. part 2d, p. 108.)

* This, it is presumed, is the scale by which those returns were made out which Mr. Villiers in the House of Commons the other night designated as fallacies. It

	England.			Scotland.			Ireland.		
	s.	d.		s.	d.		s.	d.	
Calico, white or plain, per yd.	1	3	2	0	1	6			
Do. printed or checked, do.	1	6	2	0	1	6			
Muslins, white and plain, do.	1	8	2	6	3	4			
Do. printed and checked do.	1	10	2	6	3	4			
Fustians, velvets, &c., do.	2	6	2	6					
Counterpanes, each	10	0	5	0	&c.	&c.			

(Parl. Paper, No. 355, of 1826, p. 11.)

Thus an article intrinsically not worth 5d., is entered at these enormous rates. According to the declared value returns for 1836 the average value of yards of cotton goods exported was 5½d. per yard (Mr. Johnstone's scale by his exports and insurance gives 4½d. per yard) while the official scale returns them all at a rate about six times higher, and thus as yards exported are multiplied, the official value is increased, and a gross delusion imposed upon the country; yet even in this excessively magnified state the value of the animal manure laid on the land yearly by the farmer far exceeds the value of the export cotton trade, and is in reality considerably greater than the true production of the whole of that trade.

The export manufacturers complain that they are beaten by foreign competition, but they do not tell the exact nature of that competition, nor the cause of it. That has been kept secret, and was despised and ridiculed as long as possible with the scoff, "We can defy the world—Give us free trade—We fear no competition!" Well, how do matters stand under it? The other nations of the world conceive wisely, that it is better to employ their own people than to keep them idle and dependent upon foreigners for the raiment that is necessary to cover their nakedness. They have taken our cotton yarn* and weave it themselves for themselves. The quantity of cotton twist exported last year 115,000,000 lb., value 7,431,000*l.* nearly half the amount of the whole cotton export trade in 1820, will make 1,150,000,000 yards of cotton goods such as those which are at present exported. To this extent, or at any rate to a very large extent of this, is our working weaver and manufacturer deprived, or almost double the whole number of yards of cotton goods at present exported. Yet how is this to be prevented? Not surely by stopping the spinning mills. This great export of cotton yarn acts in two ways, equally injurious to our manufacturing labourers, and the manufacturers for the home market. First, to the extent mentioned it employs continental labour and capital instead of British labour and capital; secondly, by the increasing demand for cotton yarn, the price of the raw material is kept up to an undue price, to the detriment not only of the home market manufacturer, but also of the export manufacturer, all the advantage going to the foreigner, and to the American agricultural interest in particular.

Again the British manufacturer is beaten by foreign competition. Why? Let us take the account given by Mr. Greg, one of the best informed of the manufacturers, to the Manchester meeting the other day. The United States, which he says, manufactured only 100 bales in 1814, now manufacture

300,000 bales, as much as we did then; further, 16 years ago, the forest of Low Hill in the United States, echoed no sound but that of the cataract; but now there is a WATER-POWER of 5000 horses there, applied to cotton manufactures, spinning 40,000 bales yearly. The United States, he adds, not only manufactures to consume but to export; they send 34,000 bales of cotton goods to South America, and 17,000 to the Cape of Good Hope, Calcutta, and Canada. Well, this is free trade—the thing Mr. Greg and others called for. Had the Americans not been permitted to go to the last mentioned places, British cotton goods would have been taken in lieu of theirs; as regards also the bales sent to South America, they were most probably British goods slaughtered in some consigning slaughter-shop in New York. Mr. Greg must know little if he does not know that this is often and to a great extent the case; sold at New York at 60 per cent. loss, the American purchaser can under-sell the British exporter 30 per cent. (such Mr. Rawson says is the extent of his loss on shipments made to every port in South America,) and yet have 30 per cent. profit. The only way to prevent this is not to send so many goods to the place mentioned.

When the quicksilver in the barometer sinks to 28 an aerial hurricane from the westward is nigh and inevitable. Whenever it is boasted in America that the customs at New York have been unusually productive, that the revenue returns there are more than half the whole revenue of the United States, then a hurricane in the manufacturing establishments of this country, which will shake the whole to their foundations, is equally near, and equally inevitable. Such a reference is an unerring guide, and in its principles equally infallible as the weather barometer.

America manufactures 300,000 bales, instead of 100 bales, her former quantity. Russia, Mr. Greg further informs us, manufactures to the extent of *one-third* the quantity that Great Britain now does—perhaps 350,000 bales. France, we know, manufactures 300,000 bales, and Germany, &c., about 200,000 more, altogether 1,150,000 bales—a number greater than our whole cotton manufactures. Now, who can help this? No one. So long as these nations are wise and understand their own interests, they will employ their own subjects, and their capital, instead of the capital of Mr. Greg, Mr. Rawson, &c. &c. A manufacturer, Mr. Hind, I think, stated at Manchester, that the agriculturists of this country must be made to know that there were numerous, and very populous, nations in the world, and that their whole population had both hands and feet. Well, surely after this notable discovery this will not be forgotten. One thing, however, Mr. Hinds in his enumeration of the parts of the bodies of the people of other countries forgot to mention, namely, that they had heads also—heads, at least as wise, if not wiser than his; because these heads think it wise and just to protect the operations of the hands, feet, and heads of their own people in preference to those of other nations.

Further, the manufacturers do not tell us the whole truth why they are beaten. First, it arises from some nations resorting to a restrictive system in order to protect their own industry without reference to Great Britain or any one else. Secondly, they are opposed by *water-power*, both in the United States, in Germany, in Switzerland, &c. This is the true secret of the success of the opposition. Steam, the power the British manufacturer employs, and which he thought would give

is indeed a most fallacious test. Coffee, for example, is valued, per cwt.—England, 140*s.*; Scotland, 56*s.*; Ireland, 10*l.*!! Wine is valued—Portugal, 25*l.*; French, 22*l.* 10*s.*; Madeira, 21*l.*; Rhenish, 28*l.* 10*s.*; Canary, &c., 34*l.* per tun, old measure, in England; in Scotland, Rhenish is 82*l.* 10*s.*; in Ireland, 25*l.* 10*s.*; Spanish, 31*l.* 17*s.*; &c., &c. What just idea can such returns give of trade?

* Russia and Russian Poland take a very large quantity of this yarn—in 1836 the quantity taken was 19,178,483.

him the command of the commercial world, now not only drives the machinery of various nations, but also carries the raw material cheaply, and with speed and safety, into countries formerly impracticable to carriage but at a most expensive rate, and again brings back the manufactured goods at an equally cheap and rapid rate, and thus facilitates the application of water-power in places where that power could not formerly be resorted to for manufacturing establishments. Such is the case up the Rhine and the Rhone into Switzerland and by the former river into Baden, Bavaria, &c.; by the Danube into the heart of Austria, Bohemia, and Hungary; and by the Elbe and Oder into Prussia, &c. This is the fact, and who can help it? No one. It might have been foreseen and partly guarded against, namely by keeping our own markets to ourselves. The difference of this power to steam (see evidence Mr. J. Kempton, Committee on Commerce, 1833) is as 2*l.* 10*s.* by water to 12*l.* 10*s.* by steam. In this way our manufactures are beaten, and will be beaten in many countries, unless they have recourse to a similar power. And why should they not? Amidst the innumerable valleys in the west of Scotland, and in Wales and Ireland, what multitudes of fine streams flow with rapid courses, to the mouths of which steamers could go with perfect ease and safety, and carry quickly and cheaply the raw material and the manufactured goods to and from Liverpool and Glasgow! streams running through fertile valleys into beautiful, navigable, and safe arms of the sea where fish can be had in myriads with little labour and at a low price, and other provisions as cheap as in any part of the Continent, and cheaper than they are in the populous parts of the United States. This is an object worthy the attention of both the government, the landed proprietor, and manufacturing capitalists, and this resorted to, there will then be no necessity for Mr. Johnstone, of Glasgow, to transport his manufacturing establishments from the banks of the Clyde to the banks of the Hudson, as at Manchester he seemed to think he would be obliged to do.

These are the causes, or some of the causes, that are operating against that universality of manufacturing supply which our generous and liberal manufacturers call for,—causes, my lord, with which our corn laws, or rather just protection to our agricultural interests, have nothing to do, and which are beyond the power and the province of either the British government, or any other government to interfere with or to control. Admitting that the corn laws were abolished and grain admitted from all quarters, free and unfettered, and that the manufacturers took advantage of their free scope to export goods so cheap, that they would, as they assert they can do, beat all the world, what would be the consequences? First, so much as the income of the landed interests and all connected with them is cut off, would the deficiency [of consumption in cotton goods at home (all those finer descriptions, too, which require most manual labour, and which only the most wealthy can buy freely) and the sale of the manufacture of that and of every class for the home market fall off, while a greater quantity of cotton goods would be thrown into the markets of the Continent which do not want them, and also into other countries, into which markets, when once brought, they must, as in the United States, be sold,—slaughtered wholesale,—purchased low in one place to beat the British manufacturer with his own goods in another. Does any sane man

amongst the export manufacturers mean to say that they will export to various markets of the world (it is this portion of manufacturers alone, be it observed, who complain so loudly) goods equal to the extent of the reduction of rental which would follow the free admission of grain? It would extend to 1,150,000,000 of yards additional of such goods as they now export, at the very lowest computation; while the other portion of our manufactures would just lose, to an equal extent, of their more valuable trade—I say valuable, because the home consumption trade is always well paid, the foreign rarely, if ever.

The real truth is, there are more goods made and exported, than the market of the world can buy and consume or pay for. The consequences of this system are, that whenever an undue export takes place, terrible distress and wide-spread loss ensues, and goods in glutted markets are sold at such ruinous prices, that no more can be exported but at a great loss, until these are cleared out of the way. Let me place before your lordship, from the official tables taken from the Finance Accounts of each year this state of the British trade for a period of 12 years, contrasting the exports, &c. for six years ending 1830, with those for six years ending 1836. These will serve to give you a clear idea of the cause of the present cry about distress amongst the exporting manufacturers.

TRADE OF THE UNITED KINGDOM.

	IMPORTS.		EXPORTS.	
	<i>Official value.</i>		<i>Official value.</i>	<i>Declared do.</i>
	£	£	£	£
1825	44,137,482	47,166,020	38,877,388	
1826	37,686,113	40,965,735	31,536,723	
1827	44,887,774	52,219,280	37,182,887	
1828	45,023,805	52,797,455	36,814,176	
1829	43,981,317	56,213,041	35,830,649	
1830	46,245,241	61,140,864	38,251,502	
Totals	261,966,732	310,502,395	218,493,325	
	Foreign & Col.	57,995,954	57,995,954	
	Grand total ..	368,498,349	276,489,279	
1831	49,713,889	60,683,933	37,163,649	
1832	44,586,741	65,026,702	36,444,524	
1833	45,952,551	69,989,339	39,667,347	
1834	47,908,931	73,495,535	41,286,594	
1835	47,463,609	77,932,616	46,926,370	
1836	55,733,418	84,883,276	53,015,430	
Totals	291,359,139	432,011,401	254,503,914	
	Foreign & Col.	69,351,944	69,351,944	
	Grand total ..	501,363,345	323,855,858	
INCLUDING FOREIGN AND COLONIAL.				
1831—1836	291,359,139	501,363,345	323,855,858	
1825—1830	261,966,732	368,498,349	276,489,275	
Excess ...	29,392,407	132,864,996	47,366,583	
EXCLUSIVE OF FOREIGN & COLONIAL.				
1831—1836	291,359,139	432,011,401	254,503,914	
1825—1830	261,966,733	310,502,395	218,493,325	
Excess ...	29,392,406	121,509,006	36,010,589	
		29,392,406		
Total		150,901,412		
Total, Incl. Foreign & Col.		164,257,402		

These tables require no comment and no observation—he who runs may read them; and if the truth were told, the loss sustained on the sums mentioned in them would show that all the relief which free admission of foreign grain would give, or could give to the exporting manufacturer—relief to be obtained at the terrific loss on the part of all the other great interests of this country—would not nearly make good, nor enable him to compete successfully with his foreign rivals.

Admitting that foreign grain was admitted free, and that the agriculturist is no longer to have any protection for his capital and his industry, the reduction of rental could not be less than 25 per cent. We have seen what this rental is—81,000,000*l.* This would give 20,000,000*l.* loss to the landholder—a capital of 615,000,000*l.*, equal to the whole national debt, and three times as much as the capital vested in every species of manufacture. So much less must every landholder consume of every other article and produce imported into, raised, manufactured, and consumed in this country—so much would his property be deteriorated, *one-fifth*—and so much in proportion would the capital of every establishment dependent upon home trade and consumption be lessened. The manufacturing labourer for export would gain nothing, for just so much must his wages be lowered to enable his employer to export without a loss—for it is impossible he could export to beat the foreigner; and so much must the wages of every tradesman of every description throughout the United Kingdom be lowered, while these would all be lowered to a still greater extent by the number of additional labourers which will be thrown out of employment in agriculture, and forced into the manufacturing market, when those who work for the home and our colonial markets will be found discharging a large portion of their hands, instead of employing additional, even at reduced wages; while the exporter has recourse for his ideal greater trade to the steam engine to produce goods to be slaughtered in markets which either do not want them, will not take them, or which, if these take them, cannot pay for them.

This would be the result of the present crusade, if successful, even amongst the manufacturing population themselves, and also amongst the agricultural. But the evil to the nation does not stop there. Twenty millions yearly revenue, and 615,000,000*l.* capital taken from the agricultural proprietor alone of this country will add so much more to the property of the landed proprietor on the Continent, and his increased prosperity and capital will enable him by banking, and other similar establishments, to foster and support his native manufacturers, like as British landed property, formerly put in a state of activity, fostered, supported, *made*, the manufacturers of Great Britain; for it is a fact which cannot be disputed, that it was real property banks, not manufacturing mercantile ones, that gave the impulse to all our national industry, and which in fact now maintains it. Withdraw that, and the fabric will tumble to pieces. Yet what is sought will not only withdraw so much capital from Great Britain, but plant so much disposable banking capital in the hands of rival nations.

But this deterioration of the property of one class is not the whole of the evil. In the estimated value of the produce of agriculture, wheat, the price of which for various reasons regulates that of all other agricultural produce, is taken at 50*s.*

The introduction of foreign grain, unrestricted, would bring down the price of wheat at least one-fourth, or 12*s.* 6*d.*, all other kinds of agricultural produce must be reduced in a similar manner, because every one connected with their production, or dependent on that production, must find their means proportionally reduced. In grain the reduction would, at the rate mentioned, be 38,500,000*l.* yearly, and on all agricultural productions 137,000,000*l.*, even at the above ratio in price, but much more at a higher or at its present ratio. So far the farmer has relief against this to the extent of 25,000,000*l.* reduced rents, but beyond that the producer and all connected with him must reduce wages and expenditure to the extent of 112,000,000*l.* Let all the other interests of the country, especially the producers of iron, beyond the manufacturing exporter to foreign countries, not British, look to this and think of this; and let the monied interest, the landowner, and the government—the two former, as it will affect the value of money or real capital, and the latter, as it will affect the produce of taxes. These latter must be reduced in proportion—and, if the consumption of this country is in all things 660,000,000*l.*, and this produces 50,000,000*l.* revenue yearly, then *one-fourth* (for so it is nearly) consumption reduced will produce only 38,500,000*l.*, which, deducting 20,000,000*l.* for the yearly expenditure of the indispensable national *peace* establishments (to say nothing of war), leaves only 18,000,000*l.* instead of 30,500,000*l.* to pay the national annuitants their interest; or procuring a confiscation of nearly half their property—and which deterioration of their income and property must again, to the extent of 12,500,000*l.* yearly, diminish the trade of every human being who works for the home market.

On London the results will tell in this manner:—Half the rental of the land at least is spent in London. Therefore, half the reduced rental, 12,500,000*l.*, on the part of the proprietor; the whole of the deficiency or deterioration of funded property, 12,500,000*l.* more; and at least an equal sum of the general diminution, 112,000,000*l.*, on agricultural returns, finds its way to London in indirect expenditure—together, 37,500,000*l.* yearly, half her yearly resident consumption and expenditure in all things thus taken away and transferred to foreign countries.

Such would be the state of London—half-pay at all the public offices; her clubs deserted; her bankers, capitalists, and professional men, all half idle; her butchers, bakers, tailors, dress-makers, shopkeepers, artisans, &c., working half-tides, and reduced to half their customary comforts and allowances; the rental of her houses diminished one-half; the splendid mansions of the nobility deserted; Regent's Park uninhabited; solitude reigning in her docks and wharves; and a weekly newspaper, from poverty and necessity, substituted for a daily one. The fourth estate of this realm may emigrate, especially from the metropolis, to another hemisphere, and carry their types along with them.

Now, does any one mean to say that these losses will enable the exporting manufacturer to beat down all foreign competition, and give them, even if the world were inclined to allow them, the command of every market of the world? One tells us that he is beaten by 30 per cent. Another, that he is beaten, even in a British market, 45 per cent. Either the one must be untrue, or the calculated relief must be a dreadful delusion. Besides, even to gain this inadequate relief, the cotton export

manufacturer must sacrifice 20 per cent. of his fixed capital; he must strike that off his property as a dead loss, to stand on equal ground with the new capitalist, who would come into the market of production on the cheaper terms; and not only the export cotton manufacturer must strike off as a dead loss this amount of his fixed capital, but every other manufacturing interest, and in fact every other interest, shipowner, houseowner, &c. &c., must, together with the farmer, do the same thing. And in this general reduction and adjustment does the fundholder really think he can escape? He will, after the land, be the next victim of the political economists, who, the more they destroy, the poorer they will find themselves in the end. Moreover, in this general reduction, Mr. Johnstone seems to have forgotten that the cotton spinner will have his share in the general saving, which is calculated upon in the reduction of the price of food, &c. &c., and he will accordingly send a greater quantity of yarn to foreign countries, and thus keep every other cotton manufacturer and exporter in the same helpless state—if helpless it really is—that they now are.

Of the statements made at these manufacturing convocations take the following:—Mr. Brookes stated at the Manchester assembly, that where he used to sell 1000 pieces of goods per week to Germans, he now only sold 100 pieces, and that he sent goods to no less than 100 places. From this statement it might be supposed that the British trade to Germany had actually decreased in that ratio. Let us, therefore, attend to that which the official Custom House returns say on this point both as to quantity and value.

COTTONS EXPORTED TO GERMANY.

Goods.	Twist.	Declared Value, including Hosiery.
1820..47,658,283	11,627,328	4,168,458 <i>l</i> .
1836..37,558,457	31,323,478	3,132,114 <i>l</i> .

TOTAL EXPORTS TO GERMANY.

	Declared Value.
1827	4,654,618 <i>l</i> .
1836	4,463,729 <i>l</i> .

Whatever decrease there is in goods is clearly owing to the increased exportation of cotton yarn; and thus, though Mr. Brookes does not export so many pieces of goods as he did, some others export articles to an equal value. This, with the determination of the Germans to manufacture for themselves with their cheaper water-power, and also by their protecting duties, are the causes why our trade with Germany must remain stationary—perhaps decrease; but it may here be observed, that if they do not take so many cotton goods as they did, they take more of something else. Moreover, our corn-laws have nothing to do with the argument of the cotton manufacturers, that if we will take their corn, Germany will take our goods, because I never heard that Germany had much corn to spare, if any, after supplying the wants of her own population, so numerous and so industrious.

The *Times* of the 31st ult. in its arguments for the repeal of the corn-laws, gives as an irresistible and unanswerable reason, “that the British labourer can exchange his week’s labour for a much larger quantity of corn abroad than he can get for it at home.” Now, this is a very specious argument, and is, in fact, the essence of all the statements, assertions, and oratory of the political economist and the manufacturing exporters to foreign countries, embracing about one-tenth only of our manufacturing trade; but when attended to and

examined, it is a miserable fallacy and a sheer delusion. The British labourer can do no such thing; for if he had corn or food at the Continental prices, he would, neither in the manufacturing, nor in any other department of life, receive so much wages as he now does, and it is not a little surprising that a journal so acute and able as the *Times* is, should not see this.

Since the commencement of British manufactures they have ever been protected, and strongly protected, against foreign competition in all the British dominions. It was right and just that these should be so. The clamourers, however, on the present occasion, supported and called for a different state of things. To a certain extent their wishes and demands were complied with. Mischiefs to themselves and others was the result. Still in favour of every British manufacture heavy protecting duties exist. The present protecting duties on cotton goods, even those made in British territories, is 20 per cent., and on yarns 10 per cent., and other things 40 per cent., and even higher. During the war the direct taxation of the nation fell heavy on the agricultural interest, and but light on the manufacturing: the nature, extent, and result of that war tended to increase our manufactures, and the large profits obtained, being then without competition, enabled the manufacturers to do that which they never could under other circumstances have done, namely, perfect their machinery; when borne off their feet by their success they proclaimed themselves invincible, and said to the world, “Come and take as much of this perfect machinery as you please; we defy your exertions, and scorn your puny operations!” Behold the result—the world proceeds to beat them; and yet, while enjoying protection themselves, they say, “Come, crush the greatest interest in the country, that on which all others, even the manufacturing, depends; withdraw all protection from it, and continue it to us, in order that we may proceed in our Will-o’-the-wisp career to crush the rising and united manufacturing energies and exertions of the civilised world!”

This is the language held—this the object avowed. How wild, how ungenerous, and how unjust! How totally opposite to their own principles and doctrines blazoned to the world, namely, that every one should buy at the cheapest market. Then, why should the greatest interest in the country, outweighing all the others put together by 15 to 1, not be allowed to go and buy from our continental neighbours their so much cheaper wares? Why do the agriculturists not call for this? Why, but because they are not so “stupid” (so a Common Councilman the other day designated them), as not to know that if they bought foreign manufactures instead of British manufactures, they must throw their countrymen idle, and lose a market for one-third of their produce. The manufacturers must act to the agriculturists as the agriculturists act, and are willing without accusation, reproach, or menace, to act towards them.

The corn laws, or, fair protection to the agricultural interest, are asserted to take from the pockets of the British consumers 25,000,000*l*. yearly. This false, fallacious, and *ad captandum* argument, if argument it can be admitted to be, is a two-edged sword, which cuts more deeply the assailant than the assailed. The population of this country consume to the extent of 245,000,000*l*. in manufactures. All these, the manufacturers tell us, could be purchased in other countries 40 or 50 per cent. lower than in this; consequently, even at 40 per

cent., the people of this country lose, by the same mode of reasoning, 98,000,000%. The protection given, if protection is wrong and unjust, costs the people of Great Britain and Ireland, taken by the scale of production, nearly 11,000,000% yearly.

The case, my lord, is a very plain one : shall that portion of our foreign trade, say, on the average, 26,000,000%, dependent on foreign countries (above one-half of this moreover, different nations cannot dispense with), or rather under a moiety of this sum, be left to itself, and the struggle its owners courted ; or, in order to make it as profitable as its owners wish, shall the whole remaining manufactures—manufacturing and agricultural interests, producing to the extent of 770,000,000%, be prostrated, and be compelled to yield up a large portion of its capital, in order to enable the other portion to carry on its operations to a greater extent, and with a greater profit, against the wisdom, the energy, the industry, and the municipal restrictions of an opposing world ? This is truly the point at issue, and it is too absurd, even glanced at, to be thought of or tolerated for one moment, by any human being without the precincts of Bedlam.

Further, in order to ascertain the extent of the justice of the cry of the export manufacturers, about the danger and losses consequent upon foreign competition, it would be proper to know how much of that competition is produced by the foreigner bringing to market “better” goods. Mr. Plint, of Leeds, informed his Manchester hearers that his former American customers told him they “could buy a much cheaper and *better* fabric (woollen cloth) in Prussia” than in Yorkshire. The Prussian cloth costs 8s. to 9s., the Leeds 10s. per yard. It is in vain for the manufacturers to deny that foreigners do make, in many kinds of goods, superior articles to the British ; and this superiority in fabric, more than cheapness in price, as a matter of course, gives these foreigners a preference in different markets. Such has been the opposition amongst the manufacturers themselves, so eager were many to oppose and undersell their neighbours, that articles, shamelessly bad, were produced and shipped to foreign markets, and the general character of British manufactures thereby deeply and seriously injured—false colours—bad cloth—the foreigner once taken in was not going to throw away his money on similar articles ; or articles which, coming from the same quarter, he had good reason to calculate would be the same as the other. With all this the corn laws and protection to the agricultural interests have nothing to do ; nor do these laws at all militate against various branches of manufacture, such as machinery, which, for the cotton and other establishments rising rapidly on the Continent of Europe and elsewhere, are, to a great extent, made in this country.

When the political economists, to which school the exporting manufacturers generally belong, decried bounties and protecting duties, and when they called for unlicensed competition, they were blind to the consequences of their own folly. So are they now in running a *muck* against the best friends of the country, the agricultural interest ; and in withdrawing their attention and their eyes and their thoughts from the march of events, from the extension of an old power on new principles, and the application of a still older power in a new manner to their business, which, together, will go to change the whole structure thereof, and plant it in other countries, and also in other parts of this

country, and under, perhaps, if they do not look around them, new hands. I allude to the extension of steam power to navigation, to the construction of railroads, and to the application in many countries of water-power, instead of steam power, to all descriptions of manufactures produced by machinery. The speed and cheapness with which the raw material and the manufactured article can be conveyed to parts the most distant by steam navigation and by railroads, will lay open extensive and eligible districts of this country which were before impervious to manufactures. This change will also tend to separate establishments into more convenient and cheap districts, far from the turmoil, the proflicacy, the vice, the misery, and the poverty, which the fluctuations to which all manufacturing districts, places, and persons, are liable and exposed, when vast multitudes of men are collected together, as at present ; and thus leave the industrious manufacturer to spend his days in comparative comfort, tranquillity, and peace, weaving cloths instead of weaving constitutions for states and nations, improving the country to which he goes, and improved himself by being separated into smaller bodies in it. This will be the case unless foreigners are allowed to supplant us in every branch and in every country, even in our own, by the application of the same means of conveyance, and the new power applied, or rather extended, to manufacturing machinery—water, so abundant in all their countries, and also very abundant in various eligible spots and districts in this, and which might be made available if looked after in time. The export manufacturers would be much better and more profitably employed in directing their thoughts and attention to these subjects than in condemning, calumniating, and reviling, and seeking to injure, their generous and inoffensive fellow-subjects, who, though far more numerous than they are, and, in comparison as to real wealth, as *thirty to one*, yet being necessarily widely scattered over the country, and comparatively isolated from each other, are on that account less powerful in popular agitation than their opponents.

Amongst other things it has been proclaimed that the duty on the raw material in Britain gives the foreign manufacturer a decided superiority over the British. Without entering into the question whether such a duty is wise or unwise, bearable or unbearable, it is simply necessary to observe that the obstruction it offers to the British, and in favour of the foreign manufacturer cannot be correct, because in France there is a similar duty, and yet no such complaint is heard in that country, nor any impediment from it found, to the increase of the cotton manufacture. The duty on the importation of cotton wool into France last year was 10,852,550 francs—434,102%. The duty received in England in 1836 was 430,000% ; showing, that when the respective amount of importations into the two countries is considered, the duty on cotton wool in France must be nearly treble to that which is paid in Great Britain.

The business of the agriculturist, and the purely manufacturer, does not stand on equal grounds as to capital. The agriculturist must be possessed of capital to purchase all his stock, whether live or dead stock, and with funds sufficient to carry on all his operations, at least for twelve months as to direct wages, &c., and six months as to indirect supplies ; with credit we shall suppose for the remaining six months, under the latter head ; before he can obtain any return from his crops, even by

a bill which he can convert into cash, at the regular discount rate of banking establishments. The manufacturer can turn his yarn, bought at six months' credit, into goods in a month, and into cash by receiving bills for them, which he discounts in a week more; and this, even in his regular mode of conducting business. Consequently the manufacturer turns over his capital four times or even six times in a year, while the agriculturist can only turn his capital once. In truth, the banking interests are to a great extent the manufacturers of this country. The owner of works and machinery can act in the same way as the manufacturer in all his future operations, with the exception of the capital vested in such buildings and machinery; while it is clear that the manufacturer is not subjected to greater drawbacks in his business on account of bad markets than the agriculturist is on account of bad seasons.

The unfettered introduction of foreign grain would not only occasion a deterioration of all rental, all labour, and all property in this country equal to the difference between the decline of price and the present price of grain in this country, or the future price it will be got at from those countries from which the supply is expected; but the attack upon property would render everything unsettled and insecure, shake all confidence in both the landed proprietors and the farmer; improvements on the part of both would necessarily, and from necessity, cease; and the latter would only give, and could only give, such a rental for the land as would to the utmost secure him from those future changes and depreciations which fresh inroads and fresh laws of a description like those now demanded would subject him to. The deterioration of rental and the depreciation of agricultural property would be even greater from this cause than from the former, and, united, could not be less than 25 per cent., if not a still greater amount.

With this reduction, or rather a depreciation, in the value of all agricultural property, a similar reduction must take place in the value of all other property, real or personal, all other rental, every other income, and the value of money,—every other thing must be in this manner reduced, but the national debt due to the lawful creditor; and it is scarcely necessary to observe that it could not, under such circumstances, stand a day at its present extent and value, but that it must, from the force of circumstances, be reduced even more in proportion than any other property, nay, probably be swept away altogether.

It is easy for manufacturers to complain and theorists to declaim: it is easy for all such to tell us, Throw one-third of the lands now cultivated in grain out of cultivation, and put these into tillage, and an immense advantage would therefrom ensue to the general interests of this country. What blindness! What infatuation! Such a step would throw 550,000 horses, 160,000 oxen, and 3,000,000 human beings out of agricultural employment (but a small portion could be taken up in grazing concerns), and, moreover, throw all these on the labour market of the manufacturing and other departments at the moment when, owing to the discharge of the power mentioned, from its proposed useful employment in agriculture, every such department, or business, or individual in the kingdom would, from necessity, be engaged in discharging to a certain and to a similar extent, the power they now employ in their different avocations. Are the export manufacturers, the steam-loom and steam-engine

owner manufacturers prepared to state and to show that their increased foreign trade would absorb to equal advantage and at equal wages all this labour? With the result mentioned, the step would lower the value of all the present grazing establishments and returns, by bringing an additional extent of production into the market, which could not be used or consumed from the general reduction of capital and wages in that as well as in every other branch of business in the kingdom. Such reduction of wages is inevitable, and such reduction of all wages, manufacturing and otherwise, would reduce consumption in every thing. Such must be the result. In fact, the manufacturers tell us that without a reduction of wages they could derive no advantage, and they consequently call for a reduction in the price of provisions, as the means of enabling them still further to reduce wages, already in many instances, for the sake of attempting to beat foreign competition, reduced to the starvation point. The result of the step recommended, nay demanded, would to the extent coolly contemplated by cold-blooded political economy calculators, first, deprive the landlord of at least 20,000,000*l.* (more probably 24,000,000*l.*) of his income: secondly, curtail the expenditure of the farmer in direct food and wages 45,000,000*l.*, and in indirect wages and supplies 31,000,000*l.*; all other fixed incomes such as rental of houses, funds, &c. &c., 17,585,988*l.*; together, 112,585,988*l.*; independent of the reductions which would follow in the shipping interest, the employment of horses not agricultural, and the manufacturing departments of every description engaged in working for the home market. Yet unless the few exporting manufacturers can increase the foreign trade of this country, at present, say, average 27,000,000*l.* yearly, so much that from its extent and profits they could make good all the foregoing losses to other classes of the community, such must be the results to the country, and to all her great interests, agricultural, commercial, manufacturing, political, and social, were the present demands of the export manufacturers complied with. Does the wildest and most extravagant amongst them mean to say that they could, in their small field—a field limited, too, by the wisdom, the interests, the energies, and the activity, of all the remainder of the civilised world—make good to the nation the above loss, or even the value of the yearly depreciation of grain only (at 20 per cent., 30,400,000*l.*), which would ensue by listening to their *felo de se* counsels?

We have seen the enormous injustice, and the enormous loss, which would be inflicted on all our national interests by the adoption of the system required by the exporting manufacturers, and let us next turn to look at what they would gain by it. Their avowed object is a reduction of the wages of their labourers, already sufficiently low—at least a reduction in proportion to the reduction of the price of bread; for surely they do not propose that these should eat grass and hay, like Nebuchadnezzar in the days of his insanity and debasement; and as they look for no reduction of expenditure where taxation is concerned, but only in the price of food and other manufactured articles necessary for clothing—which reduction, be it observed, whatever it may be, is made at the expense of the comforts of their fellow-subjects and fellow labourers—this is the *amount* of the saving which they seek and call for. Admitting that the export manufacturer, by the reduction of the value of all other property, and cost of manufactures, &c., in this country, ob-

tained his food and supplies of every kind, exclusive of taxable cost, say 25 per cent. cheaper—which certainly is the very utmost that he could do, or that he could expect—what will be the results as to our foreign trade, and those connected with it—or who labour directly for it? In the first place, the labourer, or artisan, for this department would find his situation not one whit better, inasmuch as whatever he saved in food and clothing by the reduction alluded to, he would lose in wages just so much reduced; or else his employer, according to his own account, can obtain no advantage whatever. Secondly, suppose the wages of every manufacturing labourer, of every description, to average 10s. per week, or 26l. per annum, and that the whole sum so paid yearly is 130,000,000l., and that on the half of this 25 per cent. is saved; the amount so saved is 16,250,000l. yearly. Now, how will this affect our whole manufacturing interests—for the whole must then be taken, not a part. On 270,000,000l., the whole production of manufactures, the saving would be 6.1 per cent., while the manufacturers tell us that they would require from 40 to 50 per cent. Moreover, this is not all—they propose to export a greater quantity of goods; and suppose they double these, then the above saving would be reduced perhaps one-half, showing, either way, that the relief they demand, and in their own way—admitting, too, that everything else stood the enormous sacrifices necessary to accomplish the object mentioned, but which could not be the case—is quite inadequate to make them masters of the trade of the world, or even to bring them to compete with foreigners in those markets where all goods, or the goods of both parties, are fully admitted upon equal terms.

But, if we confine this saving to the cotton exports alone, the results will be more unfavourable to the manufacturers. Mr. Johnstone gives us excellent data to ascertain this. He spins and throws off 25,000 yards of cloth daily, with 1,557 effective hands. Now at this ratio, the whole export of cotton goods as given in yards, require 120,270 labourers. At 26l. per annum, their united wages would be 3,127,020l. Twenty-five per cent. saved on one-half of this is 390,877l. The total quantity of goods exported is 17,183,167l., on which the preceding saving is just 2.29, or 2l. 5s. 9½d. per cent.!! There would, indeed, be the interest on the saving of the capital, which would arise from the general reduction of all wages and supplies on the sum laid out in buildings and machinery to add to this, which, according to the scale furnished by Mr. Johnstone, is about 5,211,706l., in machinery and buildings; the interest on 25 per cent. saved in establishing these which will amount to 72,500l., not quite a half per cent. more; or, the whole actual saving under three per cent.—quite inadequate to gain the object which the export manufacturer has in view, admitting that there was no other objection to the experiment to be made. But the manufacturers cannot be relieved to the extent of 25 per cent. by the reduction of the price of food from the unfettered introduction of foreign grain; because that unfettered introduction would tend to raise the price of grain in those foreign countries which have it to spare, and prevent it from falling to that extent in this country. Let us take the rise in these countries—in Poland for example—to be 40 per cent.; then to half that amount the fall in this country will be prevented. Twenty per cent., then, will be the loss to the British farmer on all his productions, and also on the value of his stock; but from the uncertainty and state of inse-

curity in which everything regarding the agricultural interest will be placed, by the pressure from without, rents will fall to a greater extent than the rate just mentioned and probably exceed 25 per cent. the rate which has been taken.

Let us next look at those foreign countries to which ours exports, in order to ascertain if these really could, even if they were inclined so to do, supply us with corn of all descriptions.

EXPORTS, 1836.—DECLARED VALUE.

Foreign Countries.		£.	£.
Russia.....	1,742,432	Egypt and Ports	
Sweden	112,309	Mediterranean....	216,930
Norway	79,469	Tripoli, Barbary, and	
Denmark	91,302	Morocco	29,322
Prussia	160,622	Arabia.....	16,358
Germany	4,463,729	Sumatra and	
Holland	2,509,692	Java.....	234,852
Belgium	839,276	Philippine Is-	
France.....	1,591,381	lands	51,778
Portugal.....	1,085,934	Hayti	250,663
„ Azores ..	53,574	Cuba and other	
„ Madeira...	52,168	For. W. Indies	987,122
Spain & Balea-		U. S. America..	12,425,605
ric Isles	437,076	Mexico	254,822
Spain — Cana-		Guatemala....	764
ries	40,370	Columbia ..	185,172
Italy and Italian		Brazil	3,030,532
Islands ...	2,921,466	Rio de la Plata	697,334
Turkey and		Chili	861,903
Greece	1,775,034	Peru	606,332
Morea and			
Greek Islands	12,003		
Syria and Pales-			
tine	33,650		
			£37,833,000
British Possessions.			
Gibraltar	756,411	China	1,326,388
Malta	143,015	New S. Wales,	
Ionian Islands	109,123	&c	835,637
Western Coast		Brit. N. Ame-	
of Africa....	467,186	rica	2,732,291
C. Good Hope	482,315	British W. In-	
Cape Verde		dies	3,786,453
Islands.....	418	Guernsey, Jer-	
St. Helena....	11,041	sey, &c.....	318,609
Mauritius	260,855		
East Indies and		Total British...	£15,535,566
Ceylon.....	4,285,829		

The exports to the British possessions do not vary much. The excess or difference which appears so great in this year beyond the average, arose from excessive speculative exports to all foreign countries, especially to the United States, exceeding the general average by 12,000,000l., China is accounted as a British possession, because the trade with that country is conducted upon a peculiar and separate footing.

Even a cursory examination of the preceding return will show the fallacy and the absurdity of the cry raised about exchanging goods with countries which would give corn in return. Prussia and Russia excepted, not one of them have any to spare, and these countries pursue a wise policy to manufacture and work for themselves in every thing as far as they possibly can. Nor could they spare the supply which this country would require to make up the deficiency contemplated and called for. The United States cannot give us grain. The cheaper grain of continental Europe, Dantzic, &c., is superseding that from the United States in the general markets of the tropical world. Holland, with 3,000,000 of people, takes three times as much from us as Belgium with 5,000,000, and New South Wales nearly as much as the great empire of

China—proofs that it is to the consuming powers and industry of nations, not to multitudes of mankind, that this and every other nation ought to look for the maintenance and increase of their manufactures and their commerce.

To crown the humanity, the patriotism, the justice, and the wisdom of this export manufacturing conclave at Manchester, the chairman hinted that sugar could be got 50 per cent. cheaper in the Brazils than in the British colonies (adding that his honest assistant Liverpool brawlers carried this from Brazils to the Cape of Good Hope, and thence brought it into Liverpool as British colonial produce!), and coffee at one-half the price, which, as a matter of course, ought to be preferred and exchanged for cotton goods. This is well; this is consistent indeed on the part of those who clamour for the free introduction of the Polish and Russian corn, which, like the sugar and coffee of Brazils, is produced by absolute personal slaves; and to outrage truth, honour, justice, and consistency, and humanity more, it was also adverted to at Birmingham, amidst a similar conclave, how much had been effected by union in the question of the emancipation of the West Indian slaves. For anything or any one in Birmingham to boast of what they did in that momentous question, where they succeed in despoiling a portion of their fellow-subjects, without making themselves rich, is a piece of the greatest impudence, and the bitterest insult ever offered to human reason. Birmingham has, above all other places, contributed to inflict deeper miseries on Africa, and to lead into personal slavery, internal and external, many millions of her unhappy sons infinitely more than any other place or people on earth. The African slave-trade, its state and extent, will speedily come before the country, as it has already come before your Cabinet, from a quarter and authority which will claim the attention of this country, and even of Birmingham itself; and when the public find that about 180,000 Africans are yet yearly, as this number has yearly during the last 30 years been, carried away from their country (treble the number carried away 40 years ago), and at an expense of human life almost to an equal extent annually, they will inquire, they will listen when they are told, as they are now told, that all these unhappy creatures are purchased by the most worthless description of goods made by particular individuals in Birmingham, Manchester, and Glasgow; and in many instances these goods not even shipped to their destination in Africa by a circuitous route. The goods I allude to are goods that, when rubbed or wetted in the slightest manner, appear in fabric like so many unglazed window-frames in a deserted dwelling; and when subjected to the vapour arising in a tropical crowd or assembly, assume colours such as the rainbow never saw, and no designer ever imagined. Such goods, I repeat, are made in the places mentioned, and with a full knowledge of the place and the traffic for which they are intended. In particular Birmingham is the great emporium for the manufacture of muskets for the coast of Africa, the great medium of slave barter, and the means of procuring slaves. They cost 7s., and are sold in the markets on the other side of the Atlantic for 2½ dollars. They will hurt no one but him who uses them, and whose brains are not safe if he charges them with good powder. The humane and considerate exporters and manufacturers of such wares, however, do the best they can to prevent this catastrophe, by getting powder made as big as peas, which, even were the muskets filled

with it to the muzzles, would do no harm to any one, neither him who is shot at, nor him who fires the piece. But in this instance, as in others, these humane exporters do not see the consequences of their preventive check, because the poor people who in the national African wars are armed with their muskets and their powder, and who with these go against another nation armed with good powder and good muskets, bought from other nations, have no chance for victory; but are either slain in the field of battle, or in whole armies at once reduced to slavery, and sold as slaves to the foreign slave-trader, or sacrificed on the bloody altars of the bloody African deities, it being always the policy and the practice of African chiefs rather to catch their antagonists for the purpose mentioned than to kill them outright like civilised people.

The arms and ammunition exported to the west coast of Africa, in 1836, were to the value of 137,678*l.*, and to Brazils, and the West Indies 56,536*l.*, together 194,214*l.* Sierra Leone received that year 285,000*lb.* of gunpowder, and the year preceding 20,000 muskets. Speaking of the slave-trade at Lambatiklia, a town not far from Jimeto to the north of the Central Kong range, De Caille, vol. 1st, p. 312, says, "All the goods which are sold at the European settlements on the coast are destined for this infamous traffic; the slaves are not exported, it is true, but they are no better off than if they were." The value of a musket and a few pounds of gunpowder will purchase a slave in the interior, and be the means of bringing a dozen individuals more into that state. How many Africans, therefore, do certain Birmingham anti-corn-law agitators thus tend to enslave annually, independent of the dishonesty of cheating to the poor African, to the loss of his liberty or his life, or both?

Instead of assemblages such as this taking credit to themselves for humanity, to which they are not entitled—instead of reviling and endeavouring to despoil their fellow-subjects in pursuit of idle, dangerous, and impracticable theories, they ought to be engaged even for the sake of their own self-interest in opposite conduct. What has been done or thought of for India or for Africa, for the welfare of both, about which the ears of this country have been stunned for years past, and especially from the same quarters? To the cotton portion of these conclaves I more especially address myself. Both India and Africa, the latter in an especial manner throughout all her borders, produces, and can produce with even common care bestowed on the cultivation and preparation, cotton, of a quality as good, nay, generally better than that which is obtained from other quarters, more especially from the United States of America. Let us examine what the latter quantity is, and how much this country pays for it, and, lamentable to say, how completely she is dependent upon it. The imports this year stand thus:—

	Bales.
United States.....*	1,124,120
Brazil and Portugal.....	137,770
East Indian.....	107,480
Egypt.....	28,240
West Indian, &c.....	31,180
	1,428,790

* From the 5th January to the 5th of December, 1838, the quantity imported from the United States

The value of this at the market price must considerably exceed 20,000,000*l.* paid to foreign nations: but nearly wholly to one particular rival manufacturing foreign nation. Will our manufacturers, the government, and the people of this country not open their eyes to these appalling facts? Not only is our wise, and, as they would have us believe, far-sighted and superior-sighted manufacturers, wholly dependent upon the United States for a supply of cotton, but every few years the keen-sighted dollar-making people of these states and their connections established in Liverpool, by speculations artfully got up, fleece England, manufacturers and others, of at least 4,000,000*l.* of money; and at this moment they are sucking the heart's blood, not only out of our manufacturers, but out of the labouring population, especially those engaged in the various departments of the cotton manufacture, by keeping up from iniquitous and almost invincible money combinations the price of the raw material, while the prices of goods not only do not rise, but cannot rise; because that high price of the raw material in this country not only puts money into the pocket of the American agriculturist and capitalist, but enables the American manufacturer to manufacture from the raw material at a lower price, and which, with his other advantages, such as water-power, must daily tend to circumscribe British manufactures from finding a market, both in the United States and elsewhere, and tend to extend their manufacturing establishments, and to embarrass and to cripple ours.

If our manufacturers are so blind as not to see this—if the country is so stupid as not to see it also—then both are more stupid and ignorant than that very “stupid” common councillor of London who asserted that the working agriculturists of his native country (what has he done to remove this ignorance?) were the most “stupid” people on the face of this earth; and seeing it, and not taking sane, and proper and early measures, to prevent it, both the country and the manufacturers deserve the fate which, by remaining under apathy, and ignorance, and delusion, misled by rogues and fools, inevitably awaits them. Did Great Britain pay to Africa and India 20,000,000*l.* yearly for cotton, it is plain that these quarters, more especially the former quarter, could take, and would take, to an equal value of our manufactures, and pay for them too; while such an improvement in the social condition of Africa would enable her in other ways to take double the value of other mercantile articles from us. These are the quarters for our manufacturers to look to for real and permanent relief, and not from blind and destructive crusades led against the agriculturists of their country, whose destruction would infallibly draw down on the heads of all our manufacturers, of every description and degree, utter ruin.

The shipping interest are, amongst others, appealed to for sympathy, assistance, and support, as tending thereby to benefit their interests on this occasion. What matchless effrontery, to come from a quarter and a class which, more than any other, and before every other, has for many years been doing everything in their power to embarrass the interest in question, nay, to ruin it altogether! The shipping interest will scarcely

be so simple as to be caught by such a bait, or to run into the pit which has been so officiously dug for them. On that interest it must bring loss. The grain would be, if brought at all, carried by foreign ships. Besides, the shipping interest know well that 10,000*l.* value, carried in sugar, or coals, or timber, employ more tonnage than 400,000*l.* in cotton manufactures. Attend to the United States. In their exports of about 20,000,000 dollars in provisions, lumber, timber, stores, and fish, &c., to different countries, and the returns in produce obtained from the countries to which these exports are sent; these states employ four times as much tonnage as all our cotton manufactures put together, inwards and outwards. It was the carriage of heavy articles that increased the tonnage of the mercantile marine of Great Britain; and it is the carriage of such that is increasing so rapidly the commercial marine of the United States, and to a degree that will render these states, in the event of another war, most dangerous enemies to Great Britain.

Nor is this all. The security of the fundholder rests wholly on the land. When that is shaken, impaired, and endangered, the machinery of cotton mills is little worth, nor could the Chancellor of the Exchequer borrow so much money on them, under the circumstances mentioned, as would give your lordship, your colleagues, and official servants about Downing-street, their dinner. Strike off *one-fifth* from its value, and will not the security of the fundholder be so much weakened—destroyed, from the possibility, nay, certainty, that the same power which had struck off this *fifth*, may strike off another *fifth*, at its pleasure, and call on the fundholders also to be content with the half of their present income? Inroads once made into private property, at the voice and at the command of a self-interested, perhaps unprincipled, multitude, never stand still. It renders the invader of it worse off than he was before; and, consequently, hurries him on to call for a greater sacrifice to satisfy his theory or fill his pocket at the expense of another. With such a diminution and destruction of real and lawful property the taxes of this country cannot be raised. Without these are raised, how can the national establishments be supported, or the national creditor paid? Look around you while there is yet time, and avert by judgment and decision the ruin of our common country. The national resources once seriously impaired, the national credit once doubted and lessened, where then will be the Bank of England, the prop and stay of all the commercial interests of this country in the day of prosperity as well as in the day of danger? Where, I ask, will it be—how will it be—situated with its load of government securities shaken, discredited, depreciated? Can your lordship or your colleagues calmly contemplate the results? Yet you are asked to invade that which must shake these securities—this bulwark—and leave them liable to be further and at pleasure invaded by the same rude, senseless, and reckless array more easily than at a previous period.

The banking interests in this country are, as has been stated, to a great extent, the manufacturers of this country. Without their aid and assistance, manufactures could not be carried on to the extent they are, and they have been. The stability of all these establishments is based upon fixed property—the land, and the public securities of the country. Any banking establishment otherwise constituted may go on, and be of service in the hour of prosperity; but when the day of battle and of war—when the hour of severe and unexpected pressure comes, it is only on banks erected on the foundations men-

was, in pounds 444,000,000; two-thirds of this is brought in American ships, and one-half of it also actually as American consignments.

tioned, that the manufacturing and the commercial interests can depend. Touch the property, therefore, on which these latter banks are established—annihilate, as the measure proposed would annihilate, *one-fourth* of all the real property in the country, and while everything and every interest in it was covered with loss and dismay, these banks would not only be unable to render the assistance required, and which they otherwise could have given, but they must contract even in quiet times their business above one-fourth, and thus curtail to an alarming extent all manufacturing and commercial operations.

The corn-laws do not deprive the population of food as has been wickedly represented; but, on the contrary, they not only furnish that food for them, but afford them the means of procuring it. Withdraw these laws, or rather that protection, and both food and wages would vanish from the grasp of our population, and manufactures of all descriptions would in this country be annihilated. Such would unquestionably be the result of enriching the foreign cultivator at the expense of the British cultivator. The fact is self-evident to any but error the most obstinate, and prejudice the most blind; and it is quite lamentable to see intelligent and respectable manufacturers every where—men with practical knowledge, industry, and fortunes like Mr. Johnstone and Mr. Greg—suffering themselves to be made the mere cat's-paws of idle theorists, and mischievous politicians, whose aim is mischief, and who can only live amidst turmoil and agitation—the curse and destruction of all peaceful and profitable pursuits, agricultural, commercial, and manufacturing.

Were her Majesty's government to call for an assessment upon all the capital of this country in order to pay off the national debt, it would quickly be found how the capital in manufactures would shrivel up and evade the touch as compared to what is vested in land and other fixed property. Such a measure could only place the British manufacturer and agriculturist, as to cost of production, on any thing like an equal footing with the foreign, for instance the Polish cultivator; but till such a measure has been carried into effect, till the national debt is fully paid, let no British tongue ever pronounce the words—free trade in corn, a free trade in every thing else. Such a state of things cannot be without robbing to his last farthing the national creditor. That step taken, a division of landed property will follow as a matter of course. In the prize then sought after, the seeker would be urged on by necessity, the temptation would be irresistible, and I deeply regret to say, that the power put in operation would under such circumstances be commensurate with the work to be performed. The instigators of the present crusade see and understand this. Much also as a call for a portion of all capital, in order to pay off the public debt, would shake and deteriorate all property, still such a call would really be less injurious to real property and capital than the act which you are called upon by the anti-corn-law advocates to do.

How long, my lord, is this nation to afford the melancholy spectacle to the surrounding nations of this world, of a people tearing themselves to pieces, of one interest attempting to preserve itself, or enrich itself, or to raise itself into notice and importance by destroying another class of their fellow-subjects? To day the shipping interests are assailed, to morrow the colonial, the next day church property is attacked, and the day following the land—the prop and stay of the whole; and be assured, the next step, if this last is successful, or allowed to be successful, will—must be, the funds, and then the crown and the monarchy of Great Britain. No nation in this world pursues

a course such as this nation does. Each tries more than another to support, protect, and to unite, every interest that composes the whole, and this too without evincing any hostile feelings to other powers, in preference to anything connected with these powers. Why does not the people of Great Britain pursue the same course? and why does not her government instruct, and fearlessly tell them, that they must do so? The intention of Alexander and Napoleon, avowed to conquer the world, was sanity compared to the design promulgated by a small knot of exporting manufacturers, led by a few wrong-headed political economists to monopolise the whole manufacturing business thereof. The world repels the senseless step with derision, and every right-thinking mind in the United Kingdom repudiates the design with scorn and indignation. The day, my lord, that you yield to their clamour, and submit to their dictation, on that day you tear to pieces the title-deeds of all real property in the United Kingdom; you render the securities for funded property not worth the cost of the paper on which they are drawn; you sever by injustice to Ireland the last link of the chain which connects Ireland* with Great Britain, and you render the crown of England not worth 12 months purchase, even to the hand which may under such circumstances be found sufficiently daring and bold to bid for it.

I am, &c.

JAMES M'QUEEN.

London, Feb. 9, 1839.

ANTI CORN LAW DELEGATION.

The following is a copy of the queries submitted to and approved by the delegates, for circulation through the country, addressed to persons engaged in commerce and manufactures. The series which follows is addressed to persons engaged in agriculture:—

"ANTI CORN LAW DELEGATION.

"SIR—The deputies for obtaining the repeal of the corn laws request your answers to such of the following queries as your sources of information may enable you to furnish, in aid of their important object—a legislative repeal of the duties and restrictions on the import of all articles of food.

"1. Have the existing laws, which interfere with the free importation of articles of food, any and what effect on the foreign trade of Great Britain and Ireland, in limiting our exports of manufactures or other articles of commerce?

"2. What are the staple manufactures of your district?

"3. To what foreign markets have you been accustomed to export?

"4. Has there of late years been an increase or decrease of such exports, and in what articles?

"5. Has such increase or decrease affected quantity or value, or both, and to what extent?

"6. Does the increase or decrease appear to you to be progressive?

"7. To what cause do you attribute such increase or decrease?

"8. Has the increase taken place in those articles on which the least cost of labour has been expended?

"9. Has there been a greater progressive increase or decrease in the corresponding foreign manufactures which compete with British?—stating particulars.

* According to the Irish Railway Report of 1838, the imports and exports of Ireland, the latter almost wholly agricultural produce, were:—

1830	....	Imports	....	£15,337,097	4	6
—	....	Exports	....	17,394,813	7	11

" 10. Are any foreign markets formerly supplied by this country, now supplied by rival manufacturers of other nations, to the exclusion or diminution of our exports?—name the articles and extent of diminution.

" 11. Are there any foreign markets in which our trade, not having declined, has not advanced in the same proportion with the competing trade of other countries? In what articles, and to what extent?

" 12. Is such extinction, diminution, or smaller rate of increase in our export trade, attributable to the cheapness or superiority of foreign over British manufactures?

" 13. Are you aware of any facts showing the transfer of capital in any foreign countries from agriculture to manufactures—especially any instances in which the capital of such foreign countries would revert to agriculture if a free trade in corn existed in Great Britain?

" 14. Are you aware of any peculiar or recent encouragement given by foreign nations to the extension of their manufactures, or to the export of such manufactures?

" 15. Are you aware of any late acts of foreign legislation hostile to the introduction of British manufactures?

" 16. Do you know of any case of investment of British capital in foreign manufactures, or in establishments for making machinery for manufacturing purposes?—stating particulars.

" 17. Do you know any cases of the emigration of British manufacturers, machine makers, or other tradesmen, with their capital, to foreign countries?

" 18. Do you know any facts relative to the exportation of British machinery or tools to foreign countries?—specify particulars.

" 19. Do you know any facts relative to the evasion of the laws prohibiting the export of machinery, or the contraband trade and seizure of such machinery?

" 20. Do you know of any emigration of skilled artisans to foreign countries?

" 21. What knowledge have you of foreign establishments for the making of machinery—of what kind—to what extent—when established—and if increasing?

" 22. Are the exports of raw materials, for the purpose of foreign manufactures, on the increase? State facts.

" 23. Are you acquainted with any facts showing the number of foreigners sent to Great Britain for education in mechanics and manufactures; and from what countries, and what particular trades?

" 24. From what countries are manufactures, specifying such manufactures, now imported into the United Kingdom for home consumption—in bond for exportation—and to what extent? with such information as you can obtain as to the increase or decrease of such imports.

" 25. What is the present amount of duties and charges on such imports of foreign manufactures? specifying particulars.

" 26. What enables foreigners to undersell us—greater economy in wages of labour, cheaper raw material, or cheaper or superior machinery?

" 27. Can you give any information on the comparative money wages of foreign and British labour, and the comparative cost of the necessaries of life in foreign countries?

" 28. Can you give any other information on matters connected with the subject of these queries likely to advance the objects of the Anti Corn Law Delegation?

" 29. Name the gentleman in your locality, or of your acquaintance, qualified and willing to give evidence on these subjects.

" Your *immediate* attention and reply to these queries, addressed to J. B. Smith, Esq., chairman of the Anti Corn Law Delegation, or to your own delegates, Brown's Hotel, New Palace-yard, Westminster, will oblige, Sir, Your obedient servant,

" JOHN BOWRING,

" Chairman of the Sub-Committee of Evidence.

" Brown's Hotel, New Palace Yard,
Westminster, Feb., 1839."

QUERIES

ADDRESSED TO PERSONS ENGAGED IN AGRICULTURE.

1. In your opinion, are restrictive duties upon the importation of foreign agricultural produce necessary to the protection, and instrumental to the prosperity, of the British agriculturists, and how?

2. Have the existing laws restricting the importation of foreign agricultural produce benefitted the British agriculturist? If so, in what respects.

3. At what expense can wheat, barley, and other agricultural produce be raised in your district, and brought to market, exclusively of rent.

4. What prices do you require for these articles, in order to furnish you with what you consider a fair rate of profit on your capital, after disbursing rent, labourers' wages, and other necessary expenses?

5. If it be proved that wheat of a quality equal to English cannot be procured in foreign ports at less than an average of 35s. per quarter, the additional charges up to the time of delivering at the port of discharge in this country being 10s. per quarter,—do you think, with your own knowledge of the expense at which you can bring your produce to market, that there is any reason to apprehend such competition from foreign agriculturists as would prevent your obtaining an adequate remunerative price and fair rate of profits?

6. Would not a fair and natural level of prices, be more beneficial to the farmers than prices subject to frequent and great fluctuations, and better adjust rent, wages of labour, and other outgoings of the farmer?

7. Has the operation of the restrictive system of corn laws been to keep prices steady?

8. On a balance of years and prices, do not profits almost invariably fall as prices rise, and rise as prices fall?—State facts.

9. What extended tillage, in consequence of the operation of the corn laws, has, within your personal knowledge, caused loss to the landlord or farmer.

10. What tracts of inferior land have passed out of tillage during the low prices under the existing corn laws?

11. Can you give any examples of the extra sum received for corn in consequence of the high prices of the present season; and *per contra*, the extra sums paid for seed-corn, keep of horses and cattle, extra wages, poor-rates, tithes, or other outlay?

12. Have you had an opportunity of observing the effect produced upon Scotch husbandry by the Scotch farmers being forced to sell their grain at the same price with English farmers, who enjoy a more genial soil and climate?

13. Has not the effect of this competition been, that in Scotland husbandry, as a skilled profession, is more advanced than in England?—State facts.

14. Is there not reason to expect that the same beneficial effect would be produced upon English husbandry, if the English were brought into competition with the foreign cultivator?

15. What has been the effect of applying the system of free trade to the wool production of this country? Has the admission of foreign wool diminished English growth? Any facts showing the extension of this branch of agricultural industry.

16. Have you remarked the advantages derived by the farmer from the proximity of his land to great commercial and manufacturing towns; first, from the greater facilities of obtaining manure and other artificial aids to production; secondly from the wider and more opulent markets opened to him? If so, specify examples.

17. Can you communicate any facts showing the tendency of improved communication, viz., by steam navigation, canals, railroads, &c., to benefit the agricultural interest?

18. What proportion of the agricultural produce of your district is shipped coastwise for market? Stating quantities of each description of grain and markets to which sent.

19. Will you state any facts showing how the depression of trade and manufactures operates to the prejudice of the agricultural community?

20. Are there not many ways in which the import of foreign corn would give an increased demand for the employment of agricultural labour, directed to the extension of other products of the soil?—State particulars.

21. Have the existing corn laws, while they kept up the price of bread, kept up proportionally the wages of agricultural labour?—Give examples.

22. To what extent would the free importation of articles of food benefit the agriculturist by diminishing the cost of all other articles.

23. To what extent would it benefit the agricultural labourer.

24. Is not the condition of the agricultural labourer in manufacturing districts, superior to his condition in districts wholly agricultural?—State facts.

25. Would not a free trade in corn, equalising the prices of corn in the British and continental markets, necessarily give to the British consumer the benefit of importation when there was a deficient crop, and to the producer the benefit of exportation when there was a redundant crop?

26. In your district, are any of the agricultural labourers or their families engaged also in manufacturing processes, weaving, or the like?—Give particulars.

27. Does such employment enable them to pay larger rents, or to pay their rents more readily?—State facts.

28. Have you noticed any falling off in the employment of these individuals in manufactures of late years?

29. Has this been attended with loss to their landlords as well as to themselves?

30. Have any, and what improvements in agricultural machinery (the result of the improvement of our manufacturing machinery) have been introduced in your vicinity?

31. What is the average produce of wheat per statute acre in your district; and has there been any increase or decrease of late, and to what extent?

32. Has there been any emigration of the agricultural population of your locality, either to foreign countries or to manufacturing districts, and of what class of agriculturists?—State particulars.

33. Is it not a fact large tracts of land are in a state of deplorably backward cultivation in consequence of the direct of indirect action of the corn laws?—State examples.

TO THE RIGHT HONORABLE LORD JOHN RUSSELL.

MY LORD,—From the tenor of your Lordship's letter to the constituency of Stroud, and from what has transpired since the meeting of Parliament, I am apprehensive there is a danger that your Lordship and colleagues of Government, may be inclined to yield to the obstreperous clamour from without, for a total repeal of the Corn Laws. I trust, therefore, your Lordship will pardon me for presuming to address a few observations to you on this topic.

The avowed object of the Anti-Corn-Law Agitators, is to reduce the money price of food, and to obtain, as they say, two bushels of wheat for the price at which the now obtain one.

That the abolition of the Corn Laws will have the effect of reducing the price of wheat in this proportion, is clear and undeniable; for it is fresh in the memory of us all, that only two or three years ago, when the present protecting law had been in operation at least seven years, the best English wheat might be purchased at less than 35s. per quarter. If this was the case when foreign corn was virtually prohibited, and not a grain of it in the market, what may we expect when all restriction shall be done away with?

It may perhaps be said, that foreign wheat will never be offered in the English market, but at a price

to remunerate the speculator for the outlay of his capital, and the cost of transit. But we shall find in practice such will not be the case. When wheat in the continental markets shall bear an unusually low price, reckless adventurers will always be found to hoard large stocks of corn in British warehouses, to hang in *terrorem* over the home-grower. The same fact will operate to retard the purchases of the consumer. Thus the English farmer through need, consequent on the reduced value of his produce, presses his grain on the market. The speculator, hopeless of prices getting higher, or from pecuniary embarrassment, is compelled to do the same. The purchaser, seeing the supply exceed the demand, naturally becomes cautious, and to what the prices may be reduced in plentiful years, is impossible to calculate.

It is well known that the foreign wheats are far superior in quality to those of English growth. Yet in numberless instances have foreign merchants offered to deliver any required quantity of the best foreign wheat in English ports, at 30s. per qr.

It need not be told to any one who knows wheat from other grain, that in the average of years, there is such a difference in the qualities of English wheats, that the inferior sorts are not worth more than two-thirds of the value of the best. In case then of a free importation of foreign corn, when the best Dantzic wheat shall be had for 30s. per quarter, what will the inferior sorts of our own growth be worth? Our corn letters even now, occasionally state grain of a certain quality, and from certain counties, at such a price, and of other qualities, or from different counties, unsaleable. What they will say of the indifferent qualities of English wheat, when they shall have to quote the best Dantzic at 30s. per quarter, I do not know.

If we are to have a free importation of wheat, I apprehend we must have the same of every other description of grain, and the same reduction in the price of these as of wheat, according to their relative values.

But we are told, England must become a grazing country, and we must turn our attention to the production of beef and mutton. Be it so;—shall we be any better off? It is contrary to the nature of things, that there should be for any length of time, a considerable disproportion between the price of bread and of animal food. If a greater number of cattle are to be bred, and fed, and our inferior corn used for that feeding, a greater supply of mutton and beef must consequently be brought to market.

On the other hand, so long as any disproportion exists between the price of bread and of animal food, the consumption will naturally be more of the cheap than the dear food. The consumers, on the aggregate, will naturally be inclined to purchase of the kind of which they can obtain most for their money. Thus with an increased supply, and a diminished demand, we should speedily have the price of this, reduced to a level with that of the other great necessary of life.

It may be said, that if a part of our corn were devoted to the feeding of cattle, it would have the effect of keeping up the price of that article. But how this idea must vanish, when we reflect on the insignificance of the quantity of grain which could be used for feeding cattle, in three small and isolated patches of land called Great Britain, compared with the produce of the boundless territories of Russia; with the contents of the inexhaustible granaries of Poland, Germany, Holland, and other European States, in favorable and productive years. The merest fraction of the produce of these countries, in addition to

our own, would always have the effect of keeping the prices in our market down to the level of those on the continent. The superior quality of the foreigner's corn would in ordinary years always be equivalent to the expense of transmitting it to this country.

Seeing then, that the abolition of the corn laws will have the effect of reducing the prices of corn, and consequently of every other description of agricultural produce in England to the level of the prices which these commodities bear in the neighbouring European states, let us enquire what section of the population of this country will be benefited by the change, and whether the good or evil resulting therefrom will preponderate.

It is, I think, admitted by all, that the farmers will not—that their labourers and mechanics, such as smiths, joiners, wheelwrights, &c., will not—that the landlords, with their domestics and dependants will not; together with the multitude of others who derive their support directly from the labours of the agriculturist.

It is undeniable, that all these must suffer in a greater or less degree, from the reduction in prices, which must result from the abolition of the corn laws.

If the produce of any particular farm would, at the present market prices sell for 1,000*l.* sterling, it requires no great mathematical skill to discover what the same produce would fetch if the prices were reduced one-half; it would then amount to 500*l.* instead of 1,000*l.* It is clear in this case, that somebody must fall short, and whether it be the landlord, the farmer, the labourer, or the mechanic, all who do so come short—must have so much less to expend with the manufacturer.

But it is said, the landlords must lower their rents. If they do, what then? Mr. Huskisson and other political economists have stated that farmers must make five rents in order to pay all out-goings, and receive a fair return for their capital employed. The farmer, then, who pays 100*l.* a year in rent, should make 500*l.* a year of his produce, so that after paying his landlord, he would have 400*l.* to meet his other engagements with.

But if the value of his produce in the market were reduced one-half, instead of making 500*l.*, he would only make 250*l.*

Supposing then, the landlord to forego the rent entirely; somebody else would come short considerably, for there is a wide difference between 400*l.* and 250*l.* No reduction, therefore, nor even the entire cancelling of all rents, would compensate the farmers for the reduction of prices. Some may, perhaps, say the statement is exaggerated, that it is not necessary the farmer should make five rents. I will concede any thing; I will not confine myself to giving the pawn and move, for half the pieces and half the moves on the board, may be given in the game. I will say that four—that three—aye, that two rents are sufficient. This farmer then, who has 100*l.* a year to pay his landlord, must make 200*l.* a year of his produce. But if by doing away with the corn law the value of his produce be reduced to 100*l.*, how does he stand? If the landlord forgives him his rent, he may seem to stand as before. The landlord, however, being deprived of his rent, can be no customer to the manufacturer—the manufacturer being deprived of so good a customer, could not purchase the farmers' corn and mutton. Then, our own produce, without one ounce from the foreigner, would glut the market, and fall in price because of the inability of the manufacturer and others to purchase.

If then, the repeal of the corn laws will not bene-

fit, but injure the farmer, and his dependants, will it benefit the manufacturing operative? If I understood the anti-corn law argument, it is not intended so much for their benefit. The masters say "we cannot compete with the foreigner because of the *bread tax*. The foreigner, in consequence of the low price of provisions can get the labour cheaper; whereas if the price of provisions were lower in England, labour would be cheaper, and we could then meet the foreigner on more equal terms." It is evident therefore, the operative need not expect to derive any benefit from *cheap bread*, as this will only supply the master with a pretext for screwing down his wages accordingly. *Cheap labour* is the object of the cotton lords—*cheap bread* is but the stalking-horse.

But will not they be worse off in consequence of the influx of labourers from the agricultural to the manufacturing districts, resulting from certain descriptions of land being thrown out of cultivation and others cultivated less perfectly? The supply of labour will assuredly exceed the demand, and wages must go lower, and still lower; for a principal tenet in the creed of the political economist, is to buy where it can be had cheapest. The manufacturer will not give a workman 2*s.* per day, if he can get one as good for 1*s.* 6*d.*

It may, perhaps be said, the increased demand for manufactured goods will be equivalent to the increased supply of labour. This is undoubtedly a fallacy, for it is quite certain there must be a most woeful falling off in the means of the home customer, which no increase in the foreign can make up for. If the total annual value of farming produce be two hundred millions sterling, and this by the contemplated change, should be reduced to one hundred millions, will not the money to be expended in manufactured goods be reduced in the same ratio, and nearly to the same extent? Whoever may receive this two hundred millions, whether the landlords, the clergy, or the farmers, none of it is laid up in a napkin; somebody expends it, and the bulk of it ultimately goes through the manufacturer's hands. If then, the manufacturer would lose home custom to the amount of one hundred millions a-year, is not this many times more than all the exports put together, which have probably never yet amounted in real value to more than 40 millions a-year? But the foreign trade will increase, say they. Perhaps it may; I have however, great doubt of its ever materially increasing beyond what it is at the present moment; for, notwithstanding all our boasted industry, skill, capital, and all our other means and appliances to boot, foreigners have the same. We are equalled in ingenuity, we are equalled in perseverance by one nation or other, and when required, capital is not wanting. The perfection of our machinery we cannot monopolise—the machinery can be exported, and the maker of it can emigrate. Many nations are equal to us in local advantages, some indeed far superior.

Without steam we could do nothing, but coals are not to be had without labour; engines are costly and will not last for ever, and boilers want repairing. Other nations have a cheaper agent—America for instance, has available water power sufficient to drive all the engines in England, with their jennies and power looms, and the buildings that contain them root and branch into the Atlantic together.

Is it not then, unreasonable to suppose, that we can materially increase our foreign commerce, when other nations are wisely cultivating their own resources, and possess superior natural advantages?

Is it within the bounds of probability that we

should long continue to fetch the raw material from the antipodes, to Manchester, to be there manufactured, and then carry them half the way back again, and sell them to a people who have the same means of preparing them that we have, and which means must sooner or later be called into activity? No! cheap bread will not enable us to do this whatever wondrous it may perform. For if the manufacturers could induce the workmen to live with the chameleon, they could not work impossibilities.

England has had her day, and may have her morrow. Other nations have had the same, but they are gone by. The same fate awaits this country.

But if we could retain our foreign commerce, or even if we could double it, which is morally impossible, what would it be worth?

If the exports now amount to forty millions a year, is this all profit? One cheap article of export is manufactured cotton, but have we not first to purchase the raw material, of this and other things? Before we can have goods that will sell for forty millions, we must give perhaps fifteen or twenty millions for the stuff to make them of. I will say, however, that the material costs only ten millions, and the remaining thirty is clear and absolute profit, and that the aforesaid *cheap bread* would make this thirty into sixty millions. What would it be if divided among the thirty millions of our population?—2*l.* per head,—nearly sufficient to keep each individual in the union workhouse fourteen weeks. We must, therefore, look to something else than foreign commerce for our support, for it seems that if the most visionary and extravagant ideas about the increase of it, could be realised the whole fee simple of it would not keep the population one-fourth of the year.

Our home resources therefore, at the lowest possible estimate, must be three times more valuable than our foreign. But in reality, they are, and must be, ten times more valuable. Who then would fling away, a great and valuable treasure in possession, for a trivial one in expectance? Who would wilfully sink the ship, for the uncertain chance of saving the boat?

Neither master nor operative then, can be at all benefitted by the change. The first, because no increased demand in the foreign markets could at all make up for the decreased one at home; and then "filthy dowlas" would be a drug. The second, because the increase of their numbers, together with the decreased demand for their services, would cause wages to settle to the starvation point.

If then the farmers and their dependents,—the manufacturers and their dependents, are not to be benefitted, who are to be so?—There is one party,—the idlers. I do not use this as an opprobrious epithet, but only as a convenient term.—By idlers I mean all such as have fixed and settled incomes,—all who live out of the taxes,—the interest of mortgages and other securities, &c.,—these *will* be benefitted, for as the money price of the necessities of life are decreased, so are the incomes of these parties enhanced in value. The individual who possesses 50*l.* a year, could make it go as far again, if every thing he has to buy, should be reduced in price one-half. Therefore the inevitable conclusion is, that as you reduce the price of British produce, you actually increase taxation, and all other fixed incumbrances. Our settled and unalterable engagements, such as government taxes, poor-rates, tithes, county-rates, interest of mortgages and of other securities, &c., &c., will amount I have no hesitation in saying, to one-hundred millions a year. Now, if faith and honesty are to be respected, these engagements we must fulfill. Suppose then the whole produce of the

labour of the British population, food, manufactures and merchandise, of every description, will realize at the present prices, 400 millions sterling annually, we must yield to the fundholder and the idle party, as I have for convenience termed them, one-fourth of the proceeds of our labour! But if the money price of these commodities shall be reduced one-half, we of course can make but 200 millions, instead of 400; still our obligations will be the same. We shall have the same 100 millions of cash to hand over, which instead of being one-fourth, will then be one-half the produce of our industry. Let not then the advocate for low prices stultify himself by complaining of the oppressiveness of taxation. Let him bear this indisputable fact on his mind, that *as the prices are diminished, taxation in the same ratio is virtually increased, and vice versa.*

The cheap bread party, however, tell us taxation must be reduced. If by reduction, they mean retrenchment, I would say, no Joseph-Humish-penny-farthing-economising of the estimates, or the pension list, can be sensibly felt as a relief to us. Or if by reduction they mean what is termed equitable adjustment, alias palpable robbery, then I would say, noman that believes in a hereafter could countenance such a proposition for a single moment.

Every one who does not live by picking and stealing ought, one would think, to scout the idea of perpetrating such a fraud on the national creditor, when he can so easily preserve the public faith inviolate.—Yes, inviolate! We have the power to discharge not only the interest, but fairly and effectually the very principal of the national debt.

We pay now fifty millions a year in taxes. Some thirty years ago we paid eighty or ninety millions a year; and why could we not do the same now? We are immediately descended from the race of men who did pay this amount. We inherit, I apprehend, the same degree of skill and industry,—the same fertility and productiveness belongs to the soil. Why then can we not do what our forefathers did? The prices won't let us.—Legislative bungling won't let us.

The principal bearing of the corn-law question lies between the productive and the non-productive classes. It is simply this; are the drones of the hive to be satisfied with one-fourth of the sweets which the working bees produce, or are we to give them one-half? In other words, are the fundholders and others of that party who have fixed money incomes, to be contented with so much as their 100 millions a-year will purchase, at the present prices of the necessities of life which the country produces, or are we to vote them double that quantity by repealing the corn laws?

When great political questions are agitated in the extraordinary manner that this now is, it is difficult to ascertain what moving power is behind the scenes to stimulate the excitement,

The impression on my mind is, that the great capitalists are not neutral in this struggle, that they are secretly encouraging this commotion with the selfish view of enhancing the value of their capital, at the expense of the landholder and industrious classes. But they may strain one point too far. The saddle may gall beyond the powers of endurance, and a convulsive effort may dislodge the burden altogether. These gentlemen may then find themselves in the same situation as that renowned youth who having a goose that layed him a golden egg every day, killed her with the view of possessing the whole at once, and only discovered his mistake when too late.

I will say nothing of the folly of relying on the foreigners for the supply of our daily bread. An ar-

gument on the propriety of this cannot be maintained between two persons who are free from the restraint of strait jackets. Although we have the periodical assurance of the friendly intentions of these foreigners from the lips of royalty.

It is a grand mistake to think that the manufacturer's interest clashes, and is at variance with that of the farmer. What is good for one will not be bad for the other. And if the farmer be oppressed the manufacturer will not flourish. Indeed I will risk the assertion (if I stand alone in the opinion) that the all-absorbing interest, and only occupation of man, is agriculture. Manufactures and commerce are only helps and auxiliaries to this grand occupation of mankind; the same as the hedger and ditcher are to the farmer.

An agricultural labourer may be employed exclusively in hedging and ditching, and neither sow the seed nor reap the harvest; yet the end and object of *his* labour is to raise food. The man who makes the spade and the man who uses it have the same aim, namely to raise the sustenance of life. The same may be said of the man who makes the labourer's clothes, as of the man who makes his tools. And so of the endless variety of trades and manufactures. Indeed the whole catalogue of the pursuits and businesses of life form but the most extensive exemplification of the division of labour. If the assistance of five and twenty pair of hands be required, each pair to perform its separate and distinct part of the work, before a piece of wire can be made into a pen, need we wonder at the infinitude of trades and callings which ingenuity and experience of man have contrived to facilitate the production of the staff of life? All who have read the adventures of that renowned personage yclept Robinson Crusoe, must have a strong idea of the character and occupation of that man who may either from accidental circumstances, or individual inclination, be compelled to live independent of the rest of his species. He must be essentially an agriculturist. Although he may find it indispensably necessary to have tools, it is only that he may the more easily obtain the support of his existence. Although he may find it desirable and perhaps necessary to contrive shoes, clothes, habitation, &c., all these are but to promote his comfort and convenience in following his principal aim—the acquisition of the staff of life. He is therefore to all intents and purposes an agriculturist. If a dozen Robinson Crusoes had lived on the same island, and they had been anti-socialists, and severally independent of each other, they would have been so many farmers, and nothing else.

On the other hand if they had been social and united, one undertaking to make the agricultural tools, another the clothing, another the habitations, and so on, and each receiving as compensation for thus devoting his labour, an equal share of the provisions raised by the whole, they would have been individually and collectively agriculturists. And there would have been no divisibility of interests. As it is with one man independent of the rest, so it is with a society of a dozen,—as with a dozen so with a nation's population. As with a nation's population so with the whole human race. The multiplicity of trades is only the extensive divisions and subdivisions of labour, and from the time of our first parent, who was put into the garden of Eden, "to dress and to keep it," down to the present moment, we have been an agricultural community and nothing else. "*We are tillers of the ground as all our fathers were.*"

Holding it then to be incontrovertible that agriculture and manufactures have one and the same interest, and that the question of a repeal or a modifica-

tion of the corn law lies chiefly between the productive and the non-productive classes, I call upon you, my Lord, to be cautious, and not rashly to purchase a temporary possession of the power and emoluments of place by conceding to popular clamour a scale of low prices.

A convulsion brought about by the expediency of party politics is not to be relied on. The matter is too important to experiment upon, or to play at shuttlecock with, for the uncertain tenure of office.

Without using the hyperbole of parliamentary phraseology, it may be said that the Reform Bill, the Municipal Bill, the Tithe Bill, or any other bill, good or bad, sink into insignificance when compared with the Corn Bill. A dreadful responsibility therefore attaches to the person who undertakes to abrogate a law of this importance. My Lord, you cannot be sure you will be right, and you may be wrong. You may conscientiously think that an alteration in the corn law and low prices would be beneficial to the country. But with all becoming deference I must remind you that as wise heads as your own conscientiously believe that a free importation would ultimately effect the entire ruin of it. The party against the corn law may be strong, but the party in favour of it are equally numerous, though more apathetic. Therefore you cannot be sure that you are right. The wisdom of our forefathers who devised and supported the different corn laws is against you, and you may be wrong. Historical facts and experimental tests are against you. With high prices we have fought through difficulties that would have sunk any other nation in Europe. My Lord, you may be wrong. With high prices we have attained the most distinguished position in the scale of nations, for national power, national wealth, and domestic comforts. My Lord, you may be wrong. In nations where bread is uniformly the cheapest, Russia and Poland for instance, the boors of the one, and the serfs of the other, are almost entirely unacquainted with the use of it. Even in Ireland where bread is always cheaper than in England, the peasantry live almost entirely on potatoes. My Lord, you may be wrong, and I call upon you to pause. It is a bold stroke enough if a man sets his own life on a cast; but it is fearful to contemplate the responsibility that attaches to that man who would risk the comforts if not the lives of a great portion of his country's population on the hazard of the die. And I as a humble unit of the thirty millions of the population of this country, protest against your gambling with the means of my existence.

Let me implore you to rise superior to the petty considerations of place and power. If the conditions of your holding office be to risk the sacrificing of the energies and prosperity of the nation, stand aloof from the party who "know not what they do." If the phrensied clamour of "away with him, away with him," is to be yielded to, wash your hands of all responsibility, "have nothing to do with this just man," let them see to it.

I have the honour to be,

Your Lordship's very humble servant,
Beverley, Feb. 11. 1839. J. A.

THE NEW WATERPROOF CLOTHING.—In the variable climate of England, it has long been a great desideratum to obtain an effectual means of rendering clothing impervious to rain, without impeding the free escape of perspiration. This important object has at length been most completely attained, by an

invaluable discovery first publicly introduced by Mr. Walter Berdoe, tailor, 69, Cornhill, and now coming into general use. In consequence of its having hitherto been viewed as an utter impossibility for a garment to resist water, yet to admit air, this discovery will by many be viewed with mistrust; but as seeing is believing, those who doubt are invited to do as we have done, examine and judge for themselves, the result will amply repay them for their time and trouble. We were shown a great variety of samples of all kinds of cloths, gambroons, camlets, merinos, doe-skins, &c., containing water, and having retained it from one to three months, without the least appearance of even dampness on the underside. Boiling water may be poured on the surface of the material, when the steam will pass through while the water is retained. The breath will also freely pass through perfectly unrestricted, as may be seen against a mirror. Such results must at once remove all doubts as to the deficiency of the waterproof, as well as its entire freedom from what is so justly objected to the unsightly and unhealthy Macintosh, namely, its being air-tight, and consequently preventing the escape of the insensible perspiration. This inestimable discovery will prove to the public of more real benefit, than three-fourths of the inventions which are daily being emblazoned forth. The advantages attendant upon the use of clothing thus waterproof, must be so self-evident as to render it a work of supererogation to point them out, yet there are many, who in the enjoyment of both youth and present health, who lightly think of the serious ailments and afflicting results which may be traced to what is termed "only a cold," or "a slight cold," too often considered as not worthy of serious thought, a kind of thing that will "soon go off." Yet what numbers are ever after sufferers, and to what a melancholy extent have gone to a premature grave, from diseases originating in these "slight colds," which instead of "soon going off," are the cause by which the unsuspecting sufferer himself "goes off" in the end. Of the various illnesses incident to cold, too innumerable to mention here, setting aside those which terminate fatally, where is there one so truly painful and distressing, and so difficult to eradicate, as a confirmed rheumatism? What being can be placed in a more helpless and pitiable situation than the one who is "eaten up with the rheumatics?" Yet all this suffering is the consequence of a cold carelessly caught, and more carelessly attended to. The great consideration in all human movements is not so much how to cure an evil as how to avoid contracting it—and where one cold occurs from circumstances over which the sufferer has no control, fifty takes place where he has. In this respect more particularly does the evil arise from a want of due precaution against wet or damp clothing. Now that an expedient has been devised by which a person can, without any great coat, simply in his ordinary dress, pass for several hours, through the most pitiless storm, without the wet penetrating through his clothes, it is to be hoped that the most incautious and imprudent will profit by this invention, especially as the additional expense is so trifling as to place the benefit within the reach of all. We hope that the Government will evince the liberality, nay, the humanity, to allow all those who are in their employ, such as soldiers, sailors, police, &c., and are exposed to all weather, the advantages of this inestimable discovery, as the cost thereby entailed is a mere trifle, whilst their health would be preserved and their efficiency increased.—N. B. We refer our readers to the advertisement in our advertising sheet.

ADDITIONAL NOTES, &c.

TO AN ARTICLE ENTITLED "HINTS AND SUGGESTIONS"
(FROM A CORRESPONDENT) IN PAGE 190.

The following notes not having arrived until after the article in page 190 had gone to press, we insert them here :

NOTE 1. [4th Paragraph, 7th line, after the words "enfeebling labours."] In legislating for the benefit of the artisan Gaskill's account of the condition of the manufacturing population of England would give most valuable information if consulted.

NOTE 2. [4th Paragraph, 34th line, after the words "1s. a day for horse power."] One shilling a day per horse power, is named merely on principle; two shillings would probably have been more consistent with the great object in view; *i. e.* in the first place, as a wholesome check to the unlimited and often unnecessary use of machinery as a substitute for manual labour, while thousands of artisans in the trade are almost perishing for the want of profitable employment:—and secondly, to force upon the manufacturers, the choice of either keeping their work-people employed at remunerating wages, or maintain them when they choose to employ machinery in their stead; which is no more than the agriculturist is compelled to do: It is therefore too bad that the latter should also have to maintain the discarded mechanics, who have been rendered totally unfit to assist the agriculturists in their labours, while under judicious management they might be made useful to the manufacturer in some way or other to the last.

NOTE 3. [4th Paragraph, 37th line, after the words "twelve hours duration."] A peck of wheat appears to have been about the average value of one day's earnings of the labourer for ages past, as far as the researches of the writer have enabled him to make a fair computation; consequently, out of such earnings he may be expected, at all times, under ordinary circumstances, to maintain his family; so that when his wages exceed that value, provision might be made, by the Legislature, for transferring the surplus earnings into the Saving's Banks, instead of the Gin palaces, till a certain moderate provision shall have accumulated, for the purposes now to be proposed.

NOTE 4. [4th Paragraph, 54th line, after the words "Union workhouses."] Supposing the amount required for the purchase of Government Life, and Long Annuities to be fixed at, and limited to an income of 8*l.* each, and permitted to become universal; the last named security to be paid to the authorized survivors, till the respective annuitants would have attained the 100th year; the total amount would become immense, and might be converted into a medium for the gradual liquidation of the national debt. In order the more certainly and expeditiously to accomplish this great end, means might probably be devised of imposing an obligation upon all transfers of stocks, to relinquish a certain small percentage out of the total amount, for the above purposes, at par, at the rate of 5 per cent: There can be little doubt, from the nature of the above securities, that every male possessor of both kinds, might be safely entrusted with the elective franchise, in which case, universal suffrage would be thus conceded, as nearly as could be rationally desired; and we might soon see restored that union among all classes which would make such a nation as ours invincible, instead of being torn in pieces through agitators and dissensions, by which we know not how soon we may become an easy prey to our jealous rivals abroad.

NOTE 5. [5th paragraph, 19th line, after the words "at the expense of our own."] The great error in which our agriculturists and landowners have hitherto involved themselves, is their inability to perceive that as long as they shall continue to act in concert with the corn-factors, they can neither acquire remunerating profits in any season whether of abundance or scarcity, nor obtain the sympathy of the consumers in their distresses, for this very obvious reason; in deficient seasons, these speculators buy up as much bread corn as their capital will admit of from the necessitous farmers, who are obliged, early in the season, to dispose of their produce, in order to meet their pressing engagements, while the more wealthy agriculturists uniting with the corn-factors, hold back their produce from the markets, till the price is raised beyond all bounds of justice and moderation. To obviate these pernicious practices is therefore the great desideratum, and ought to engage our utmost efforts. It has been lately hinted through the press, that at this juncture, the corn-factors are endeavouring, by most unfair means, to get down the averages with a view of depressing the country markets, by inundating Mark Lane with mere refuse, so that they may be able to take the advantage of buying up at the lowest price, all they can get hold of, for the purpose of creating an apparent scarcity, and consequently of selling off their stocks at their own price. Should the prospects of the current year's crops be generally unfavourable, the consequences may prove truly deplorable. Mr. Huskisson says in his letter to his constituents at Chichester, in 1814, "To protect the small farmer, therefore, at this moment, is ultimately to protect the people." Those who are desirous of perusing the most forcible and convincing arguments which have, perhaps, ever

yet been advanced in favour of agricultural protection, should read the whole of his letter, a copy of which may be seen in the *Farmer's Magazine* for the present month (Feb. 1839.)

NOTE 6. [8th paragraph, 23rd line, after the words "neither more nor less."] To fix a price too low, would be a greater error in the administration, than to fix it too high, because the lower the price of commodities the greater is the value of money, consequently in the same proportion would our national debt be augmented, and *vice versa*. In order to secure the importers of wheat from great losses, in case of not being called upon for a series of years for their bonded corn, a certain per centage might, after the second year's detention, be taken off the import duty, and permission should be granted them to exchange their old grain for the same quantity of new, of British growth, they receiving the difference in the value. On a similar principle, should the supply of British grain be greater than the demand, in that case it would become absolutely necessary to put such a duty on the importation of foreign hemp, flax, and tallow, as should divert the surplus cultivation into the production of those most essential articles also, by which the revenue would be materially benefited, as well as the agriculturists and landowners. But since experience has taught us the inconvenience of making great and sudden changes, it would probably be advisable to commence from the present time with a duty of one per cent. on their value now, one per cent. in addition when the first deduction of duty should be required for the detention of foreign corn, as above proposed, and one per cent. more as often as the amount of a month's supply, i.e., a given quantity of British wheat, shall remain in the store-houses on the 30th of April.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR FEBRUARY.

The weather of a large portion of this month has been exceedingly mild and open for the period of the year, consequently favourable to rural affairs in general; in fact, all farm labours are well in their place. In noticing the appearance of the young wheat plants, we cannot but observe that all persons agree in stating that they never witnessed them looking stronger and more healthy than at this time; and in most, if not all, parts of England, exceedingly regular. Should, therefore, the reports of the next month prove as satisfactory as the past, the present year's crop will, doubtless (in the absence of any serious atmospheric change) be much more extensive than for some years past; and this opinion is considerably strengthened and confirmed, by the breadth of land under that description of grain, being more than usually large. Two causes have tended materially to stimulate our agriculturists to increase the breadth of wheat sown, viz., the late deficient harvest and the prices realized. Notwithstanding that last year's harvest throughout the kingdom was prolonged to an unseasonable time, and that the weather proved somewhat unpropitious at its close, it has been intimated that, on threshing out the corn, the grain has not appeared so sprouty or otherwise out of condition as might have been reasonably anticipated.

With respect to the stocks of wheat in the hands of the farmers, it is pretty generally considered that they are much larger than some would lead us to imagine. We grant, that in the counties of Yorkshire, Derbyshire, Lincolnshire and Leicestershire, they are rapidly decreasing, and smaller than at many corresponding dates.

The accounts which have reached us from Essex, Norfolk, Cambridgeshire, and Kent agree in stating, that an unusually large number of stacks of wheat remain untouched, consequently no scarcity is to be apprehended in those most important corn-growing districts.

In scarcely a single instance has either the slug or wire-worm committed extensive ravages, on any description of natural herbage, whilst it is a well attested fact, that more favourable auspices for the forthcoming general crop could not possibly be experienced. During nearly the whole of the winter, turnips, even in exposed situations, have not ceased to vegetate, and they have proved an exceedingly good and weighty crop.

An excellent fall of lambs has been produced, by the early lambing season, and the metropolitan market has had exhibited in it some very fine Dorsets which have found purchases at 6s. to 7s. per 8lbs. But a comparatively small number of lambs has been lost owing to the favourable state of the weather. Pastured fattening stock have fared exceedingly

well, whilst there has been a superabundant quantity of both dry and succulent winter food.

In some of the Highland districts the early sown wheats have assumed a sickly appearance; still, on the whole, there are no well grounded apprehensions of a deficiency. Potatoes are very plentiful and cheap, notwithstanding the extensive shipments to the port of London.

The prospects of the farmers, in Ireland, are by far more cheering than for many years; whilst their present returns, of most kinds of produce, place them on a firm and, at the same time, respectable footing. Since the commencement of the year, very mild and genial weather has been experienced, which has enabled outdoor farm labours to be carried on successfully. A most excellent bed has been secured for wheat, and the breadth of land which will be brought under cultivation, in the Spring, is expected to be much extended. More than ordinary economy appears to have been used in the consumption of potatoes; and nearly the whole of even the small farmers have still a stock on hand.

The following is a statement of the supplies and prices of fat stock exhibited and sold in Smithfield Cattle Market, during the month.

The supplies of beasts have amounted to 12,459; of sheep and lambs, to 120,452; of calves, to 904; and of pigs, to 3,041; whilst the prices of beef have ranged from 2s. 2d. to 4s. 6d.; of mutton, 3s. 4d. to 5s. 4d.; of lamb, 6s. to 7s.; of veal, 4s. to 5s. 4d.; and of pork, 4s. to 5s. 2d. per 8lbs. to sink the offal.

About 2,500 of the Scots and homebreds, which have formed the above supplies, have arrived from Norfolk; 400 Scots, Devons, and runts, from Suffolk; 320 runts, Scots, and Herefords, from Essex; 200 Devons and runts, from Cambridgeshire; 2,900 short-horns and runts, from Lincolnshire; 2,000 short-horns from Leicestershire; 900 short-horns and Devons, from Northamptonshire; 700 Devons from Devonshire; 800 Herefords, from Herefordshire; 500 runts, Devons, and Irish beasts, from Warwickshire and Oxfordshire; 530 Scots from Scotland, by steam vessels; 200 oxen, runts, and Devons, from Sussex; 20 cows, Devons, and runts, from Surrey; 120 Devons, Herefords, and Devons, from Kent. The remainder of the supply came chiefly from the neighbourhood of London.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, February 26, 1838, and Monday, February 25, 1839.

At per 8lbs. to sink the offals.

	Feb. 26, 1838.				Feb. 25, 1839.			
	s.	d.	s.	d.	s.	d.	s.	d.
Coarse & inferior Beasts	2	4	2	6	2	4	2	6
Second quality do.	2	8	3	2	2	10	3	2
Prime large Oxen.....	3	6	3	10	3	6	3	10
Prime Scots, &c.....	4	2	4	6	4	2	4	6
Coarse & inferior Sheep	3	2	3	4	3	10	4	2
Second quality do.	3	6	3	8	4	4	4	8
Prime coarse woolled do.	4	0	4	4	4	10	5	0
Prime Southdown do..	4	6	4	8	5	2	5	4
Lambs					6	0	7	0
Large coarse Calves ..	4	6	5	2	4	4	4	10
Prime small ditto.	5	6	5	10	5	0	5	6
Large Hogs.....	3	2	3	8	4	0	4	8
Neat small Porkers ..	4	8	5	2	5	0	5	2

SUPPLIES.

	Feb. 26, 1838.	Feb. 25, 1839.
Beasts.....	2,822	2,415
Sheep	21,035	19,456
Calves.....	102	138
Pigs.....	695	587

By the above comparison, it appears, that the supply of Monday, Feb. 26, 1838, embraced 407 Beasts, 1,579 Sheep, 36 Calves, and 108 Pigs more than that of Monday, Feb. 25, 1839.

There has been a decided improvement apparent in the general quality of both beasts and sheep exhibited on each market day; whilst the trade has not been to say very brisk, but the prices have been well supported.

The arrivals of slaughtered meat, up to Newgate and Leadenhall Markets, from Scotland and various distant parts of England, have been, for the time of year, somewhat extensive, they having been composed of 350 carcasses of beef; 5,950 do. of mutton; 6,000 do. of veal; and 8,000 do. of pork; a portion of which has come to hand in middling condition.

BIRMINGHAM, JAN. 31.

In our last monthly circular, issued on the 4th of 12th month, we ventured to express an opinion, that a million and a half quarters of Foreign Wheat and Flour would probably be imported previous to next Midsummer; and although the prohibition of export from France, and some other countries, added to the extreme scarcity of shipping may somewhat lessen the supply, we still think that near this quantity will arrive, by about that period, provided the duty continues long as at present. In addition to what was in bond on the 5th ultimo, the import last month amounted to upwards of 212,000 qrs. of Wheat, and 63,000 cwts. of Flour. Although the deficiency in our own crop may exceed one-fourth of an average, we have little doubt the purchases made on English account, in Foreign countries, are sufficient to meet the consumption until *another harvest*; but should the next crop be deficient, (and the history of the last half century shows that several productive and unproductive seasons have generally followed in succession), we may have much difficulty in obtaining an adequate supply, on any terms, for another year. Our most recent foreign quotations will be found below. A review of the Corn trade for the past year, presents some features of an unusual character; the productiveness of our own crops, and the favourable seasons since 1830, added to the large importations, and accumulated stocks, in the Spring of 1831, have, until last Summer, very much concealed from public view, the fact, that our average growth of Wheat is inadequate to the wants of a rapidly increasing population, and that we cannot expect an ample supply from other nations, on an emergency, while our laws, by the imposition of an enormous duty, effectually prohibit the sale of their produce in our markets, on ordinary occasions. We would hope, however, that the suffering inflicted on the poor, from the present high price of Wheat, may be in some measure compensated by the widely spreading conviction, that the plan of taxing the necessities of life, is alike impolitic, unjust, and cruel. That an immediate alteration in the system is urgently called for, is the more evident from the fact, that the supply of Wheat from Ireland since 1832, has decreased more than one half, say from 552,740 qrs. in that year, to about 210,000 qrs. in 1838; while even productive seasons are not adequate to the wants of our present population, which is augmenting at the rate of nearly half a million annually. The late decline in the London market has produced an indisposition, on the part of our millers, to purchase beyond their immediate wants, and we apprehend few foreign orders have been recently transmitted from this country. Our present nominal prices are, for English Red Wheat 9s. 8d. to 10s. 2d.; white 9s. 10d. to 10s. 4d.; fine Dantzic 10s. 6d.; hard Odessa 9s. 2d. to 9s. 4d.; French red 9s. 4d. to 9s. 6d. all per 62lbs. at Birmingham.

The opinion that the crop of Barley was fully equal to an average, both in quantity and quality, is con-

1st Mo..	BEANS.				PEAS.				RYE.			
	1837.	s.	d.	1838.	1836.	s.	d.	1837.	1837.	s.	d.	1838.
2nd	39	8	32	6	40	6	32	5	42	0	29	5
3d	37	5	33	0	38	1	32	7	40	7	28	5
4th	37	2	34	5	36	2	32	11	35	0	31	10
5th	37	8	36	2	37	11	34	2	34	11	32	2
6th	39	3	37	6	39	8	36	0	35	0	34	9
7th	40	7	37	7	40	6	35	8	35	8	35	9
8th	40	11	40	1	39	10	36	11	37	11	38	11
9th	39	11	40	2	35	11	38	8	34	1	36	1
10th	39	4	39	3	36	4	40	9	32	1	34	1
11th	36	4	43	3	35	6	42	9	30	1	39	9
12th	36	0	41	3	34	5	44	0	29	3	48	10

Years.	WHEAT.		BARLEY.		OATS.		PEAS.		MALT.		FLOUR.		OATMEAL.		IN. CORN.		BEANS.		LINSEED.		HEMP SD.		TARES.	
	Foreign.	Irish.	For.	Irish.	For.	Irish.	For.	Irish.	For.	Irish.	Foreign.	Irish.	C.	q.	For.	Ir.	For.	Irish.	Foreign.	Irish.	Foreign.	Irish.		
1828		2035		667		12561		223		425	0	456	0											
1829		10926		2599		19888		343		6279	2	61	0											
1830	23849	20986	36	13219	1981	39868	269	891		4744	2	166	0	2098	450	630				997				
1831	1831	69706	1098	23880	2521	44978	1	815		1517	3	50	0		176					2343		12		
1832	1832	32144	275	21990		61687		775		3172	0				640					1560		193		
1833	1833	30950	7948	57417		76959	546	20		4042	0	92	0		77	3088				1300				
1834	1834	28573	549	15514		108319		56		7560	0	360	0		46	3348				437				
1835	1835	8348	641	22340		104919	3796	84		26264	0	72	2		46	7592				750			1028	
1836	1836	12635	7441	27208	2665	104966	4717	18		6161	2			1504		6207				5187				
1837	1837	4978	9382	8770	95369		1460			1962	0	405	0							7195				
1838	1838	6056	4776																					

Irish, Ryc..... 90 qrs. Tares.....6 qrs.

COASTWISE IMPORTATIONS IN 1831-1832-1833-1834-1835-1836-1837-1838.

WHEAT.	BARLEY.	OATS.		LINSEED.	FLOUR.		BEANS.		IN. CORN.		MALT.		PEAS.	VETCHES.
		For.	Irish.		286 Qrs.	1743 Bar. & Sacks	232 Qrs.	600 Sacks	404 Qrs.	216 Qrs.	401 Qrs.	251 Qrs.			303 Qrs.	475 Qrs.	139 Qrs.
1831..20849 Qrs.	5695 Qrs.	7502 Qrs.						65 Qrs.						
1832..3133 Qrs.	13463 Qrs.	6481 Qrs.						391 Qrs.						1 Qr.
1833..10204 Qrs.	21708 Qrs.	16630 Qrs.						576 Qrs.						
1834..2881 Qrs.	8518 Qrs.	15703 Qrs.						673 Qrs.						
1835..784 Qrs.	10192 Qrs.	14603 Qrs.						805 Qrs.						
1836..2766 Qrs.	28264 Qrs.	16951 Qrs.						1427 Qrs.						483 Qrs.
1837..601 Qrs.	4942 Qrs.	11323 Qrs.						1100 Qrs.						Tares 240 Qrs.
1838..9126 Qrs.	3458 Qrs.	9976 Qrs.												

Grain in Bond at Gloucester, 1st. Month, 5th, 1839.—Oats, 4397 qrs.—Barley, 8 qrs.—Peas, 961.—Indian Corn 1339 qrs.

COASTWISE IMPORTATIONS IN 1831—1832—1833—1834—1835—1836—1837—1838.

Years.	WHEAT.		BARLEY.		OATS.		PEAS.		MALT.		FLOUR.		OATMEAL.		IN. CORN.		BEANS.		LINSEED.		HEMP SD.		TARES.	
	Foreign.	Irish.	For.	Irish.	For.	Irish.	For.	Irish.	For.	Irish.	For.	Irish.	For.	Irish.	For.	Irish.	For.	Irish.	For.	Irish.	For.	Irish.	Foreign.	Foreign.
1831	20849	Qrs.	5695	Qrs.	7502	Qrs.	286	Qrs.	1743	Bar. & Sacks	232	Qrs.	60	Qrs.	126	Qrs.	216	Qrs.	404	Qrs.	65	Qrs.	1028	Qrs.
1832	3133	Qrs.	13163	Qrs.	6481	Qrs.	600	Sacks	510	Sacks	1498	Qrs.	1770	Qrs.	160	Qrs.	401	Qrs.	391	Qrs.	1	Qr.	1028	Qrs.
1833	10204	Qrs.	21708	Qrs.	16630	Qrs.	510	Sacks	184	Sacks	1770	Qrs.	2446	Qrs.	160	Qrs.	401	Qrs.	391	Qrs.	1	Qr.	1028	Qrs.
1834	2881	Qrs.	8518	Qrs.	15703	Qrs.	1118	Qrs.	184	Sacks	1770	Qrs.	2446	Qrs.	160	Qrs.	401	Qrs.	391	Qrs.	1	Qr.	1028	Qrs.
1835	784	Qrs.	10192	Qrs.	14603	Qrs.	367	Qrs.	184	Sacks	1770	Qrs.	2446	Qrs.	160	Qrs.	401	Qrs.	391	Qrs.	1	Qr.	1028	Qrs.
1836	2766	Qrs.	28264	Qrs.	16951	Qrs.	114	Qrs.	184	Sacks	1770	Qrs.	2446	Qrs.	160	Qrs.	401	Qrs.	391	Qrs.	1	Qr.	1028	Qrs.
1837	601	Qrs.	4942	Qrs.	11323	Qrs.	114	Qrs.	184	Sacks	1770	Qrs.	2446	Qrs.	160	Qrs.	401	Qrs.	391	Qrs.	1	Qr.	1028	Qrs.
1838	9126	Qrs.	3458	Qrs.	9976	Qrs.	114	Qrs.	184	Sacks	1770	Qrs.	2446	Qrs.	160	Qrs.	401	Qrs.	391	Qrs.	1	Qr.	1028	Qrs.

Corn, Meal, and Flour imported, entered for home consumption, and duty paid since 1823 inclusive, the first year it was levied on corn.

	Qrs.	Qrs. for	Duty Paid.	
	Imported.	Home Cons.	£	s. d.
1823	53866	12362	10310	4 3
1824	612594	677195	176383	15 6
1825	1060837	834425	304919	15 5
1826	2252271	2098944	442755	14 9
1827	2622283	2998866	792934	15 8
1828	1294378	1237494	196834	0 2
1829	2694432	1959355	907320	5 5
1830	2691884	2649318	790877	0 0
1831	3570569	2265392	547809	0 0
1832	668422	475680	309676	0 0
1833	481506	112408	36252	0 0
1834	560056	236902	99416	0 0
1835	321206	439988	201673	0 0
1836	643762	408217	152791	4 0
1837	1325930	842326	589200	0 0
1838	1534730	1960175	183000	0 0

ESSEX.

Our report this month must vary little from those of corresponding months, beyond that the season has been one of the most charming we ever remember, frost and snow have delightfully commingled their welcome appearance with weather of extreme mildness, forming on the whole that pleasing surety so valued by the agriculturist; the verdure of wheat, vetches, grass, turnips, &c., has undergone little or no change, all is promising, all wear the unspotted livery of Nature's God. Stock has done remarkably well, the yearning of lambs early and fortunate; markets, independent of the last week or two, have cheered the hearts and blessed the houses of many a family; wages have continued to rise, the labourer has been made more happy, not only by an increase in wages, but by the hand of well-timed charity; work has been plentiful, and harmony and good feeling has prevailed all classes. But in the midst of all this a war cry has been heard from the trading masses of the North, reverberating to almost every town and village in the kingdom. Manufacture *versus* Agriculture must now be the question before the jury, soon to be impanelled to try the question, and give to us the mighty, the momentous decision. The landed interest yet comparatively sleeps over its defence, the aggressive interest has hitherto unmolested advanced to the last barrier of our defence. Its army of delegates meet under the walls of St. Stephens, and directing the assaults of their devotion, will watch with a deadly hate the opponent party. But we believe, and every market assemblage of farmers confirms the opinion, that their is strength yet sufficient in the country to repel their unjust, the selfish, the domial intentions of these cotton lords. We only wait to see the motto of their unfurled standard and see where the scaling ladder is to be placed, and with the united forces of landlord and tenant we will rally as one man, and resist, we have no doubt successfully, the base designs of so iniquitous an aggression upon our homes and property.—Feb. 15.

AGRICULTURAL QUERIES.

SIR,—Can you or any of your numerous readers furnish me with the information sought for in the following queries as to the cultivation of linseed, viz.—

- The soil best adapted for its growth?
- What crop should it follow?
- Does it or not require a fallow?
- Is it best drilled or broadcast?
- What quantity of seed is required per acre?
- And when is the proper season for sowing?

With a few general observations as to its management, and also the probable returns to the cultivator, as compared with other crops, and you will greatly oblige yours, &c.,

A SUBSCRIBER.

Winchester, Feb. 5.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

At DREWSTEIGNTON FAIR, there was a good show of Oxen and Steers, and those disposed of, sold well, but there were many things left unsold.

LIFTON FAIR was well supplied, indeed, the show of stock was very good, and it was altogether a selling fair, but at strong prices;—thus a pair of half fat Oxen were sold at rather over 45*l.* Plough Oxen were from 18*l.* to 20*l.* a piece; Plough Steers, from 14*l.* to 16*l.* a piece. Good Store Heifers were from 6*s.* to 7*s.* per score.

At SILVERTON FAIR, there was a good show of Sheep, and all the best lots were sold at deserving prices; with a view to guide the judgment as to which, it may be mentioned that a fine lot of wethers, estimated at 24*lbs.* the quarter, fetched 50*s.* a piece, or 6½*d.* per pound.

BIDEFORD FAIR was very thinly attended with fat cattle which sold at from 9*s.* 6*d.* to 10*s.* per score; store ditto, 7*s.* to 7*s.* 6*d.*; prime cows and calves sold as high as 14*l.* 14*s.* to 16*l.* 16*s.* each. Fine fat wether sheep, 6*d.* per lb.; ditto ewes, 5½*d.* to 5¾*d.* There was very few store sheep which sold tolerably brisk, and the fair was cleared early. In the Horse Fair there was scarcely a good horse to be seen, and middling ones sold at very low prices.

TORRINGTON GREAT MARKET was very well supplied with both fat bullocks and store cattle generally. Prime fat beasts sold at high prices, 9*s.* 9*d.* to 10*s.* 3*d.* per score; and a large number of store beasts were sold to jobbers at, we hear, good prices, averaging 7*s.* 6*d.* per score; and cows and calves sold readily at good prices, and as high as 15*l.* 15*s.* to 17*l.* each, and the inferior from 9*l.* 9*s.* to 12*l.* 12*s.* each. In the Sheep fair fat wethers fetched about 5¾*d.* to 6*d.* per lb.; ewes, 4¾*d.* to 5¾*d.* per lb.; and store sheep sold at 4*d.* per lb.; the supply of sheep generally was very good, and the fair cleared early.

At DORCHESTER CANDLEMAS FAIR, there was a plentiful supply of beef of prime quality, the demand for which was limited, at from 9*s.* to 10*s.* per score, and we believe 10*s.* 6*d.* was realized in one or two instances. Fresh barreners brought from 10*l.* to 14*l.* a head, the supply not being large. Cows and calves were in short supply; good ones sold readily at high prices. There was a large attendance of Labourers for hire, and many engagements were made.

STAMFORD CANDLEMAS FAIR.—This fair was remarkably well attended. The show of horses was large, and those of superior quality fetched good prices; the same remark will apply to the show of cattle.

EGTON FAIR.—There was an average supply of lean beasts, but a thin show of fat stock; the demand was brisk, and very high prices obtained. A great number of buyers attended, amongst which were several jobbers. The show of horses was very numerous, but not of first-rate quality, and the demand nothing extraordinary, although several changed hands.

LINCOLN FAT STOCK MARKET.—There was a larger supply of sheep than was anticipated, and chiefly of good quality; in the early part of the morning buyers seemed reluctant to make purchases, but towards the latter part of the day much business was done at rather lower prices. The beast market was rather small, of good quality, and nearly supported late prices.

At LEOMINSTER, on Wednesday, there was a capital show of cattle, and fat animals were in demand, as also were steers and stores. Sheep sold well, and the market was soon cleared.

At SHREWSBURY, on Tuesday, there was a larger

number of sheep than anticipated, yet nearly all were sold. Good fat sheep, of any size, went freely at 7*d.* per lb., and several pens sold at 7½*d.* Store sheep also sold readily, not being very plentiful. In the pig market, small stores advanced 2*s.* to 5*s.* a head, and bacon pigs sold freely at 5½*d.* per lb. In the cattle fair, on Wednesday, prime fat beasts were sold almost as soon as they appeared in the fair, at fully 6*d.* per lb.; many brought 20*s.* a head more. Barrens were in great demand, at high prices; cows and calves were also eagerly purchased, and the few bullocks offered were sold very well.

EXETER CATTLE FAIR.—This fair was but tolerably supplied with fat bullocks, which met with an exceedingly good sale at from 10*s.* to 10*s.* 6*d.* per score; inferior ditto, from 9*s.* to 9*s.* 6*d.* ditto. Nothing could possibly excite greater admiration than did two very splendid oxen, the property of Mr. Trood, of Exminster. And at the commencement of the fair, he asked the enormous sum of 34*l.* a piece for them, but they were eventually sold to Messrs. Darke and Hodge, of Exeter, for 60*l.*—Mr. John Pidesly, of Pinhoe, had, also, a very superior ox and heifer, the weight of the former was judged to be 60 score, and was bought by Mr. J. England, of this city; and the heifer, by Mr. Howard, of Heavitree.—Cows and calves.—A scareer supply of cows and calves has seldom been witnessed than there was at this fair—they averaged from 13*l.* to 27*l.* each. In one part of the fair we saw two milch cows, of nothing more than ordinary appearance, decorated with ribbons of various colours, this being rather an unusual sight except at Christmas (and then we believe it is confined to fat bullocks alone), we were led to make some inquiries respecting this unusual demonstration, and we were informed that these cows were the property of Mr. Richard Luke, dairyman, of this city, and yielded nine quarts of milk a-day each—they were bought by Mr. George Manning, of this city, for 40*l.* There was an excellent supply of barreners, which sold uncommonly well; working oxen averaged from 30*l.* to 40*l.* per pair—but some prime ones fetched 20 guineas each. Keep being plentiful with a great many farmers, rendered the sale of barreners and working oxen exceedingly brisk.

ABINGDON LENT FAIR was held on Monday last, and the gathering of dealers on the occasion was unusually large. Several very fine cart horses were sold at high prices on the show day, and the supply of them was found quite insufficient to meet the demand. The sale of inferior horses on the fair day was not quite so brisk. There was a plentiful supply of Cows, in which a stirring trade was kept up. Sheep, as a matter of course at this season of the year, were but few.

WINCHESTER.—Last Monday a middling quantity of Cheese was pitched, consisting of all qualities. High prices were asked in the morning; but there were no buyers. About one o'clock prices gave way, and a great deal was sold in the afternoon and following morning, leaving very little for Wednesday. Fine Somerset, 70*s.* to 76*s.*; good ditto, 63*s.* to 68*s.*; middling, 58*s.* to 62*s.*; new, 46*s.* to 52*s.*; skim, 30*s.* to 36*s.*—there was very little skim. Seeds of all descriptions were in good demand; Rye Grass, 30*s.* to 40*s.*; Mixed Seeds, 21*s.* to 28*s.*; Sainfoin, 56*s.* to 65*s.* per qr. Red Clover, 80*s.* to 95*s.*; White ditto, 65*s.* to 75*s.* per cwt. Winter Tares, 4*s.* 6*d.* to 5*s.*; Summer ditto, 7*s.* to 8*s.* per bushel. The transactions in Corn were considerable, and in some instances at rather higher figures, fine White and Red Wheats realized 17*l.* 10*s.* to 19*l.* per load, and Malting Barley 33*s.* to 35*s.* per qr. There were not many Pigs penned, which met a dull sale, at declining prices. In the Horse Fair there were a few good cart colts for sale, and high prices asked for them.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF FEBRUARY.

The clamour which it was attempted lately to raise amongst the people of England, against the cultivator of the British soil, is gradually subsiding, and a short period only can now pass before the truth will prevail, and then it will be universally acknowledged that Agriculture is the key-stone to the arch of British Society. That the manufacturing, commercial, and trading interests, are at present flourishing beyond any former period in the history of commerce, admits not of the slightest doubt, and this great increase of commercial prosperity, and national greatness, can alone, with any degree of propriety, be attributed to the healthy and sound state into which the corn-protective laws have placed that greatest interest of all, *Agriculture*. The consumption at home of every description of British manufactures is rapidly increasing, and must continue annually to do so, so long as the inhabitants at home possess ample means for payment, and this is the greatest source by far for productively employing the trading and manufacturing labourer. Not that we feel the slightest disposition to undervalue our commercial intercourse with foreign nations, (for its importance and magnitude must be fully admitted by every observer of passing events) but it is in the greatest degree unjust even to place it in comparison with our internal commerce. To the enterprise, capital, and industry of the manufacturer, new markets of consumption are annually presenting themselves, particularly in Asia and America, and here they are fully recompensed for any decrease which, by any possibility, can occur in their pursuits in a very few districts in Europe. The complaints which have latterly been made respecting the injury done to us by what is called the increased spirit of manufacturing industry abroad, and in Flanders particularly, rest on no foundation whatever; for events, which since our last publication have occurred there, most fully establish the fact, that manufacturing prosperity depends not in the slightest degree on low-priced provisions. In Belgium, for instance, where agricultural produce is certainly as low as the most ardent of our modern political economists could desire to see it in our home-manufacturing districts, the Government has been obliged to lend pecuniary aid, else universal ruin would have attended the vain and insane attempt latterly made there to rival the British manufacturer. A similar attempt was made at New York, where provisions also are abundantly low-priced, some years ago, and it was attended by a similar result. In short, the commercial position of the United Kingdom, their internal sources for manufactures, and their boundless wealth generally, must render any competition on the part of foreign nations, for generations to come, perfectly futile. The demand for shipping which now exists, is perfectly sufficient proof, if any was previously wanting, of the great prosperity which at present attends our foreign commerce. A ship has scarcely time allowed at present to discharge her inward cargo, when she is instantly again chartered for another foreign voyage, and generally, in the out-ports, no ship-builder will contract to deliver a new ship in less time than one year hence, so amply, and also productively, is he at the present time employed. This is most conclusive evidence in favour of the great prosperity and rapid increase of our commercial intercourse with foreign

nations, and clearly establishes how little cause the great body of our manufacturers have to complain of the existing principles, which regulate British society under the present system of the British government. The productive classes, at all events, are sufficiently aware that if the value of the necessaries of life was reduced one-half, at least two-thirds would be deducted from their present rates of pay. Undoubtedly an ungenial season has unfortunately raised the value of living above its natural standard, and this falls heavily on all classes of society, but its duration is temporary, and the evil will be removed with its cause. The corn laws have not had any influence whatever in the production of this calamity; on the contrary, it would have been much more severely felt had the corn laws not been previously placed in operation. The protection which they have afforded to the talents, industry, and capital of those engaged in agricultural pursuits, though not nearly so extensive as it should have been, nor equal to the protection which the law has extended to every department of commerce, shipping, and manufacture, has naturally been the cause of a great and rapid improvement in agricultural science, and has caused the produce of the fields to increase in quality and quantity at least one-half more than the same lands produced a quarter of a century ago. Had these agricultural improvements not previously existed, the distress and misery, which the last unfavourable season must have produced, would have far exceeded in their consequences, the universal sufferings which a very similar bad season created at the close of the last century, when wheat was sold at eight guineas per quarter, and provisions of all descriptions, reached an equally extravagant value. The corn laws have certainly tended in a most eminent degree to moderate the evils attending an unfavourable season, and in so far they have been of great advantage to every person in the United Kingdom. To them we are in a special manner indebted for the absence of famine in the land this season, and, as under their influence the progress of agricultural improvement must rapidly go forward, and most probably will prevent in future, the occurrence of the temporary distress experienced this season. Whilst these laws are only in their infancy, it is of the greatest public importance that they should at all events be perpetuated, if they be not amended, for on them mainly depend the prosperity and independence of all classes of British society. To produce at home abundance of all the necessaries of life must be a general benefit, and that this must be the result eventually, of strictly guarding the real interests of agriculture, of protecting the capital embarked in agricultural improvements, and of holding out favourable prospects to those, who employ their talents and their industry in agricultural pursuits, is placed beyond all doubt, by the general and almost boundless advantages which have already been obtained from the very partial practice of those laws, and which, under an improved form of them, must continue to increase with the increase of the population; and with that enlargement of the human mind, which education is so rapidly producing amongst mankind. Those who so loudly complain of the unfavourable effects which the corn laws produce on commerce, either labour under deep prejudices

or have not paid that attention to the subject which its great importance demands. Their intentions no doubt are good, but they advise a most extraordinary method for obtaining the benefits which they wish to confer on the manufacturing interests. To send money to foreign growers of corn with the view of dressing them in British manufactured goods, seems to be the only idea which they possess for extending the trade of the United Kingdom. To send British money to Poland for instance, to enable that enlightened people to clothe themselves in Manchester manufactures, these political economists fancy, would increase the sale of their goods, whereas every day's experience proves that the consequences would be the reverse. The growers of grain in Poland are not its proprietors. Whether prices be cheap or dear to them is not of the smallest importance, for it alters not their wretched condition in life; the magnate and the prince alone enjoy the British money exchanged for Polish grain, and a small part only of these payments is ever transmitted to our trading districts in return for British goods, whilst the same amount of money expended amongst our home growers of grain would, to the last farthing, be expended on articles manufactured at home. We now allude to the average of seasons, for the present one is an uncommon one, and, on that account ought not to be included in a general statement of what, in common seasons, constitutes the true wealth of nations. It would really be as reasonable to propose that a sum of money should be drawn from the consolidated fund, invested in British manufactured goods, and these goods transmitted to the corn districts on the continent to clothe their half-naked inhabitants, as to propose, in common corn seasons, that foreign grain should be permitted to destroy the fair incomes of our home growers. The act itself would be one of self destruction on the part of the manufacturers themselves, for by it they would gain a very small increase indeed, to their present foreign trade, and by reducing the value of agricultural produce at home, they would destroy a very large portion of their present home consumption, even were they prepared to reduce the value of their goods in proportion to the reduction which a free corn trade would, from necessity, cause in the value of all the necessaries of life.

That protection to the labours of the field is necessary to the prosperity of every class of society in Great Britain, cannot be doubted by any who permit themselves coolly to examine this important subject. Much good has already been effected in all departments of agriculture, under the influence of a fair protection, but a vast deal more still remains to be done even in Great Britain herself. Much land perfectly capable of cultivation, is still if not absolutely in a state of nature, of little use to mankind; and the most highly cultivated fields have not yet nearly reached that degree of improvement which they must do by a wise perseverance in our present agricultural system. As the wealth of the soil increases, so also must the prosperity of mines, of fisheries, of manufactures, and of commerce generally be extended even in a more than proportionable degree, but without the prosperity of all those who are engaged in agricultural pursuits, every other interest in the state must in time decay. Agricultural improvement must last for ages, and those now in progress here will heap the greatest benefits on many generations still unborn, whilst the works of the manufacturer speedily perish, and are seldom of use to any beyond their first proprietors. In Ireland the continuance of the corn laws is still of more importance to the inhabitants than they are even to those of this

part of the United Kingdom. There boundless fields for enterprise present themselves to every department of human ingenuity, but the prosperity of agriculture is absolutely necessary to their due development. Without this there can be no real reward for the labour of the artist, or of the manufacturer, and without the necessary degree of protection, agriculture must remain nearly stationary, and so consequently must every department of commerce. Under the influence of the corn laws millions of acres of land, capable of producing wheat crops for a century to come without the expense of manure, may be reclaimed from a state of nature by the industry of the inhabitants of Ireland, and may add many millions sterling annually to her wealth, but profitable markets must be found for the consumption of their agricultural produce, and so long as poverty is the lot of a vast majority, these markets cannot be solely found in Ireland herself. Under the present imperfect system of agricultural protection Ireland has already made no inconsiderable progress in agricultural improvement, and during the passing corn season the inhabitants of Great Britain are reaping and will continue to reap very considerable advantages from this circumstance. As yet, oats have been the principal object of the Irish agriculturist, and even in this unfavourable season, the quantity of this article produced there has so far exceeded the home consumption demand, that the surplus has been found fully sufficient to supply the deficiency which existed in the produce of this article in different districts in Great Britain at very moderate prices. As agriculture increases, and the art of tillage improves in Ireland, the attention of her farmers will naturally be more directed to the cultivation of wheat and barley than it heretofore has been, and it may be most justly inferred from what has occurred already in the Irish oat crop, that hereafter those of barley and wheat there may be found equally beneficial to the inhabitants of this part of the empire, should necessity again require it, and prevent the great expense which during the current season we have already been put to, and must continue to pay for supplying the deficiency in the last wheat crop with wheat of foreign growth. To enable Ireland however to go forward in the cultivation of the fields, her farmers must continue to receive the patronage of the corn markets in Great Britain, of which the total repeal of the present corn laws, imperfect though they most certainly are, would entirely deprive them, and without which every incentive to further improvement would be taken away. The injuries inflicted on the Irish people by absenteeism will be, under the influence of the corn laws, in a considerable degree alleviated by an equitable administration of the poor laws in that part of the British empire; for when the land proprietors are compelled to maintain, or to find employment for the destitute, productive labour in the greatest abundance will be found for the entire population. The cultivation of the waste lands, of mines and fisheries will, in a few years, most amply reward the landholders for supporting during a short period those who at present are from necessity, and not from inclination, in a state of perfect idleness, and the field there for operations of this description is so extensive that the annual produce may be raised to triple its present rate. The amount of the quantities of the necessaries of life may be so much added to, by that degree of encouragement which the vast wealth of the empire can well afford, that, in no distant period we may be not only rendered entirely independent of foreign nations for the supplies occasionally received from them of the necessaries of life, but will in every probability eventually become ourselves exporters of flour and

provisions of all kinds to our West Indian settlements, and to many of the rapidly rising states in South America. To dispel these prospects, if so be the pleasure of the British legislature, a more effective plan, than the repeal of the corn laws, cannot well be devised, for with them must speedily disappear every incentive to industry, and upwards of one half of the population be thrown into a state of comparative distress. Those who are the real producers, whether they be agriculturists or traders, begin, even already, to be perfectly aware that provisions, under their natural standard of value, cannot be of any permanent benefit to themselves, for not only would the wages of their labour be reduced in more than a proportionable ratio by a continuation of too cheap provisions, but probably at least one half of those articles of general consumption, in the production of which they at present receive productive employment, would cease to be required, because payment could not be found for the same quantities of them as was the case when the agricultural interest was in a state of comparative prosperity. The productive classes are sufficiently aware that an article can only be cheap, or dear, on comparison with the value of other articles of the same necessity, and that 4s. will purchase as much bread at 2d. per lb. as 2s. can do, was the price one-half less. This truth is perfectly exemplified by the existing state of society generally at the present moment throughout the United Kingdom, where, although most unfortunately, through the agency of the elements, bread is enormously extravagant in price, still no uncommon degree of distress is, at all events as yet, visible, no large body of labourers from this unfortunate circumstance have, as yet, been thrown out of employment, nor has the industry of the people been in any material manner affected by the advanced value of provisions, because this misfortune presses equally on all classes, and in its duration it can only be of a temporary nature. The half of this corn season, however, has already passed away, and from appearances in the farmyards, at all events plenty of grain remains to supply the wants of the people until its conclusion. Since our last publication the London market has received a fair supply of British grain of all descriptions, and a most abundant one of flour. During the same period speculative purchases have almost ceased, although large quantities, of wheat in particular, have been taken off for the great markets in the West, and in the Northern parts of Great Britain, for there the deficiency in the last crop has been found even larger than it was sometime ago expected to have been.

In the beginning of February and latter part of January it was generally supposed that the supplies of all descriptions of grain would have considerably exceeded the usual consumption, and consequently the demand was in most instances confined to the actual consumers of it. Wheat at that period became exceedingly dull, and no extensive sales of it could, for a time, be effected, unless its proprietor submitted to a decline in its value of from 10s. to 15s. per qr. according to quality, and this fall caused, from necessity, a corresponding one in the value of flour. Since then, however, the arrivals of British grain for sale, in the great markets of consumption, have not been so abundant, and an advance in value, though not nearly equal to the decline, to which we have now alluded, has been the necessary consequence. It remains now to be seen whether the short supply of British grown wheat be actually the effect of a real deficiency now existing in last year's crop, as many suppose to an alarming extent, or whether it be the result of some other cause

which time alone now can shew; but one thing is certain, and to know it must be satisfactory that, in the home counties generally, at least the usual quantity of grain for the time of the year of every sort, still remains in the hands of the producers, and this fact may, before the close of the present season, produce still important results to all interested in the corn trade, for it must soon come into the market for consumption, the present prices being fully as dear as the most sanguine holders can expect to obtain at the close even of the present year, and its value then must depend on the real wants of the community at large, for in no other channel can actual buyers of it be found. There can then be no demand for exportation to any quarter at our present prices, and no speculators can be expected to embark their money in it for the same cause. Besides, vegetables and various substitutes will, as usual, make their appearance in the different markets as the Summer months approach. But the principal obstacle to any material improvement in wheat prices occurring before the commencement of the ensuing autumn must be in the amount of foreign wheat then actually arrived, or known to be on the passage. Since the turn of the current year, the quantity already received, at a duty of 1s. per qr., is much larger than could have been reasonably expected. These large supplies are chiefly from Holland, from whence little was expected till latterly, from France, and from the Peninsula. From the Mediterranean a large quantity is known to be on the actual passage, and still a larger quantity is known to have been already purchased, chiefly in the Black Sea, and in various ports in Turkey, for which some difficulty is experienced in procuring shipping at the moment; but this obstacle will, as the summer approaches, disappear, more particularly when it is known generally amongst the ship-owners how extravagantly high the freights were by the latest advices. At Odessa, and other places in the Black Sea, the best quality of wheat cost about 45s. per qr. free on board, to which let a freight of 18s. per qr., and other expences, be added, and it will be found, quite dear enough on its arrival here, at present prices, even should the duty continue at the low rate of 1s. per qr., on which the buyer made his calculation. From Hamburg, and various other places without the Baltic, a great deal of grain will be forwarded, but as yet the season has been most unfavourable for shipment of grain being made from thence to this country; another month or six weeks, however, at most, will very considerably increase our stocks of foreign grain by arrivals from those places. The lower ports in the Baltic will open shortly after that period, and, should our prices maintain their present rates, the quantity from these places, likewise, may be far larger than is at present generally expected, for the influence of money is quite wonderful, and draws from various quarters various articles, the existence itself of which was previously considered apocryphal. But should our prices continue at those rates which admit foreign wheat for home use at the low duty of 1s. per qr., until the navigation of the Vistula between Posen and Danzig be again opened, then we shall be most bountifully supplied with the finest qualities of Danzig, or rather Polish wheats, and the return of winter alone can be expected to stop the supply from this quarter, should prices continue to encourage importation. The holders of wheat in the United Kingdom, whether it be British or foreign, should well consider the future prospects of the market here before they consent to limit the supply, for a favourable appearance in the wheat fields, to-

wards the end of April and the beginning of May next, with the prospect of large foreign arrivals, must produce effects of the most serious consequences, in proportion as prices are now high, and the trade consequently unusually dangerous.

The supplies of barley generally, during the last month, have been large, but certainly not more so than circumstances required; for, independent of the legitimate consumption of the maltster and the distiller, a considerable quantity has been purchased by various descriptions of millers to mix with high-priced wheats. This circumstance has caused this article to maintain rather extravagant prices considering the large produce of it last season; indeed, we may add, that, in the barley districts of England, the growers never had a more profitable crop. An effort on the part of the Chancellor of the Exchequer, made this sessions of Parliament, would, in a very few years, cause a demand for a larger quantity of barley, by at least one-third, than is at present in use. To reduce the malt duty from 20s. per qr. to one of 13s. 4d., or of even 10s. per qr., would raise the consumption of malt from 6,000,000 of qrs. used at present to 9,000,000 of qrs. and upwards. The revenue most certainly would not be injured by this reduction of duty, but would more probably be considerably improved by it, and many honest families and industrious labourers would be able to afford occasionally to themselves the luxury of the almost necessary article of beer, who under the present arrangement of pay, and the present beer price, can seldom indeed allow to themselves the use of this, the most wholesome, and certainly the most favourite, beverage of Englishmen. To the barley land-proprietor, and the barley grower, this concession would be of very considerable consequence, for it would render sandy soils much more valuable than they are at present to the former, and to the latter it would open a much wider consumption for his produce, than exists under the high beer duty on the average of years. It would also render necessary a great extent of green cropping for the food of cattle, which the addition to the barley fields would require for the purposes of manure, and eventually every cattle market in the United Kingdom would feel the benefits which would most naturally result from this partial remission of a part of the present heavy government impost on malt. This is a practicable corn-improvement question, and one which is interesting to all classes of society, whatever may be their pursuits in life.

Since the turn of the year the different large corn markets have been plentifully supplied with oats, but not more so than the regular demand required. As, however, it is at present generally understood that these supplies will, at all events, be maintained, if they be not even considerably increased, during the remainder of this corn season, prices have continued extremely moderate, nor at present is there much probability of any material alteration now occurring in them before the result of the next harvest be ascertained. To the north of the Humber, and on the west coast of England and Wales, this article suffered more damage during the last unpropitious season, than either wheat or barley did, but its value has not been enhanced in a proportionable degree, although its consumption has been very considerably increased by the deficiency, which has been experienced in the quantity of the other two. This most favourable circumstance has been solely occasioned by that degree of wholesome protection which the corn laws have

conferred on the cultivators of the Irish soil. In Great Britain, for several years past, the growth of oats has been very much superseded by that of wheat, and of other agricultural produce of greater value, and the consequence of this alteration has been to clear our oat markets more extensively than they formerly were to the industry of the Irish agriculturist. By legal protection then administered, the growth of grain is annually increasing throughout Ireland, more particularly of oats, and, although this article suffered there severely last season, by the bad state of the weather, still the increase of production has latterly become so much larger than the great body of Irish consumers can afford to pay for, that the surplus has been found fully sufficient to hold all the oat markets in a state of great moderation as to value, keeping the supply on an equality with the actual demand, and preventing the consumers from paying cash to foreigners for the deficiency in the British oat crop. From this, and from numerous other circumstances, we are persuaded that a faithful statement to the community at large of the advantages of agricultural protection to every class in the empire is only to be made, to cause numerous petitions in its favour to be transmitted to the legislature, more particularly by the *operatives* themselves, for the employment of their industry does, and always must, mainly depend on our internal and colonial means of payment, and certainly not on the paltry quantity of manufactured goods exported to the great corn districts throughout Europe, in exchange for grain.

In another month the appearance in the fields must become interesting in the extreme, not only to the importers of foreign grain, but generally to the people themselves. Of the former gentlemen, it is not more than common justice to say, that the public is under deep obligations to them for the great exertions which they have made to supply the deficiency in the wheat crop of last harvest. That their importations were made with a view to profit is most certain, but their profits are certainly not greater than the capital, enterprise, and perfect knowledge of the corn trade most eminently entitle them to receive; indeed, they are not more than an adequate remuneration for the risk of property, to which they subjected themselves, and for the anxiety to which they must have submitted during the progress of their operations. It is to be hoped, however, that the improvement of agriculture here will, before many years can now pass, give employment to the talents and capital of these gentlemen in finding out foreign markets for the consumption of the surplus of British and Irish agricultural products, and not, as it has now for upwards of a century been the case, in discovering quarters, from whence foreign grain can be found in abundance and at high prices for the use of the British people. It is most satisfactory, on this subject, to know that the season has hitherto been as favourable as could well have been expected to the operations of the farmer. A larger breadth of ground than usual, has been placed into wheat tillage, and the winter plants are looking healthy and certainly as luxuriant as they ought to be at this early period of the season. They are not too forward, but they are strong at the roots, and the shoots will come away with great strength as the spring weather approaches, showing, as far as any opinion can as yet be formed of them all the indications of an abundant yield from them when they come to maturity. The ground generally is likewise in a forward state for the reception of the spring seed.

CURRENCY PER IMPERIAL MEASURE.

	Per Qr.	Per Qr.
WHEAT, Essex & Kent .red..68	70 74	white 72 76 80
Suffolk & Norfolk .., 68	70 72	do. 72 74 78
Irish....., ..	60 66	do.... 66 70
Old, red	72 78	do... 78 84
RYE	40 42	new.... 46 48
BARLEY, Grinding 36 38 Malting	40 43	Chevalier 42 44
Irish	34 36	Bere... — 30
MALT, Suffolk & Norfolk	66 70	Brown.. 65 68
Kingston & Ware	68 70	Chevalier 68 70
OATS, Yorkshire & Lincolnsh, feed	26 28	Potatoe..30 31
Youghall & Cork black 22	23 24	Cork, white 22 23 24
Dublin.....22	23 24	Westport 24 25
Clonmel.....24	26 28	Limerick 23 25 26
Londonderry	24 25 26	Sligo. . 23 24
Newry	28 29	
Galway.....	21 22	
Waterford, white.....	21 22	Black.. 23 24
Scotch Feed	27 29	Potatoe 29 30
BEANS, Tick.....	37 38	Small 40 42 44
PEAS, Grey.....	38 —	maple.. 38 39
White	42 46	boilers.. 46 48
SEED, Rape	32 36 1/2	Irish 25/ per last
English Red Clover, fine.....	64 70	80s per cwt
White	62 66	70 80s
Mustard, White, 12s 14s..brown 21s 22s		per bush
Tares..32 36.....old 30 31..new 60		—s per qr.
FLOUR, Town-made	65	Suffolk ..54 55 per sk of
Stockton & Norfolk—	54	Irish fines 56 — 280 lb.
		Superfine..58 —

Foreign Grain and Flour in Bond.

WHEAT, Dantzic.....	60	70
Hamburg	60	68
BARLEY	36	32
OATS.....Potatoe	20	— feed 15 to 16
BEANS	30	—
PEAS	24	27
FLOUR, American.....per brl.	40	42

IMPERIAL AVERAGES.

	Wheat.	Barley	Oats	Rye	Beans	Peas
Week ending						
Jan. 11th ..	81 6	40 4	26 8	51 11	41 8	42 5
18th ..	81 4	42 4	26 9	52 4	42 1	43 3
25th ..	79 3	42 5	27 0	49 3	41 8	42 0
Feb. 1st ..	77 0	41 2	26 3	48 11	40 8	42 2
8th ..	74 1	40 4	25 8	48 5	39 9	41 0
15th ..	71 6	38 6	25 2	44 6	38 8	39 7
Aggregate Average of the six weeks which regulates the duty.....	77 5	40 10	26 3	49 3	40 9	41 9
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the Mail of that day from London.....	1 0	1 10	7 9	1 0	9 6	8 0
Do. on grain from British possessions out of Europe....	0 6	0 6	2 6	0 6	0 6	0 6
Foreign Flour, 7d. per 196lbs. British Possessions, do. 3gd. per 196lbs.						

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, February 22, 1839.			AVERAGES from the corresponding Gazette in the last year, Friday Feb. 23, 1838.		
	s.	d.		s.	d.
WHEAT	71	6	WHEAT	55	2
BARLEY.....	38	6	BARLEY.....	28	8
OATS.....	25	2	OATS.....	20	9
RYE	44	6	RYE.....	27	6
BEANS	38	8	BEANS.....	32	8
PEAS.....	39	7	PEAS.....	32	10

SEED MARKET.

FEB. 25.

The Cloverseed trade remained in a very inactive state during the past week, though on Friday red seed excited rather more attention. The supplies of foreign

reported up to that day amounted to 1313 bales and 19 casks, of which 1,072 bales were from Havre, 25 from Bordeaux, 70 do. from Boulogne, 120 from Antwerp, and 25 bales and 19 casks from Hamburgh. This morning we have a fair show of samples, but holders do not appear disposed to submit to lower rates, indeed, for secondary qualities a better inquiry was experienced, and in some instances a trifling improvement took place in the value of these kinds. White without alteration. Linseed and Rape-seed dull, and the lower qualities of the latter rather cheaper. Linseed Cakes the turn cheaper. In other descriptions of Seeds very little doing, and the value of Canary, Coriander, Carawayseed, &c., remained precisely as on this day week.

CLOVER English, red.....	70 95	white	54 73	per cwt.
Dutch	—	—	—	—
German.....	55 90		54 72	
French	—	—	—	—
American	—	—	—	—
Trefoil.....			16 28	
Rapeseed, English	£34 £36	foreign	£28 £30	per last.
Linseed, English sowing..	—	—	—	per qr
Baltic	—	—	46 48	crushing
Medit. & Odessa	—	—	48 50	—
Hempseed, small ..	34 36	large	38 42	—
Coriander, new.....	15 20	fine	—	per cwt.
Mustard, brown	13 15	white	—	per bushel
new	—	—	8 12	—
Turnip Seed, new Swedes	20 21	other sts.	28 36	—
Rye Grass, English	30 54	Scotch	18 42	—
Tares, Winter	6s 0d	to 6s 6d		—
Canary, new	80 84			—
Caraway.....	—	—	49 51	extra 54

PRICES OF HOPS.

BOROUGH, FEB. 25.

The trade in Hops is moderate, and the prices remain without the least variation : fine parcels are scarce, and command high rates.

PRESENT PRICES.

	£ s. d.	£ s. d.
East and Mid Kent Pockets fine ..	4 4 0	to 8 8 0
Bags.....	3 10 0	— 6 6 0
Weald of Kent pockets	3 10 0	— 4 15 0
Sussex do	3 3 0	— 4 4 0
Yearlings do.....	2 10 0	— 3 10 0
1836.....	2 2 0	— 3 3 0
Old oids.....	1 1 0	— 2 2 0

WOOL MARKETS.

BRITISH.

FEB. 25.

There is scarcely any business being done at present, and the trade in general is speculating upon the time when an alteration is to take place, some of them, indeed, with rather doleful visages, but, upon the whole, with countenances not devoid of some pretty confident gleams of hope. The principal bulk of Wool being in the Northern markets, affords a large selection for the manufacturers, who are always unwilling to give a high price when a considerable quantity is on sale ; and, consequently, those who are obliged or desirous to sell, are compelled to take a lower price than they obtained a short time ago. A depressing influence has, moreover, been experienced in the effect of the pressing of an insolvent's large stock upon the market. Much apprehension, however, of any very serious reduction in price need not be entertained, as the manufacturers are generally employed, and are therefore taking off gradually the Northern stock, which, by the bye, when the dealers shall have parted with, they will be unable to replace at any lower prices than that stock cost. The only sales that have been made lately have been of flannel wool, which has been selling at a reduction from late prices, of say 2d. a pound from a month ago, when, certainly, it was fetching unprecedently high prices, in comparison with other descriptions of wool. The disturbed state of Spain must produce some favourable impression upon this market as regards prices, as such disturbances as agitate that

country must prevent agricultural operations from being carried on, as they would be otherwise, by the larger slaughter of the sheep, and inattention to them; and, immediately, by preventing the present preparation of the Wool for export to England; and from this cause, and the fact that a considerable portion of the Foreign and Colonial Wool (and also of English, with the exception of a few counties) is in the market and being consumed, should the trade be at all brisk in the spring of the year it is augured that some scarcity of Wool will be experienced. We would not advise those farmers who favour us with their confidence, to push their Wool into the market just now, as they may depend pretty certainly on obtaining a better sale in a month or two; but, indeed, our own knowledge renders this advice almost useless, when we recollect that on a former occasion the farmers exercised right judgment, and let the eager wool-dealers have their then-much-sought-after Wool at good prices.

Per lb.	FEBRUARY 1.		MARCH 1.	
	s. d.	s. d.	s. d.	s. d.
Down Tegs.....	1 8	to 1 8½	1 8	to 1 8½
Half-bred Hogs.....	1 8	1 8½	1 8	1 8½
Ewes and Wethers.....	1 4½	1 5½	1 4½	1 5½
Blanket Wool.....	0 8	1 1	0 8	1 1
Flannel do.....	1 1½	1 5½	1 0½	1 4½
Skin Combing.....	1 2	1 4	1 2	1 4

EXETER.—In this market there was a degree of liveliness such as we have long been strangers to; indeed, all those appearances that may fairly be supposed to bespeak a healthful state of trade. Most of the dealers were present and evidently desirous of purchasing; in truth, the only difficulty in the way of very large transactions, was that all important one of price. Upon the terms offered, however, of eleven pence per lb. for **YORK WOOL** several lots were sold; and these circumstances were looked upon as the harbingers of a more cheerful state of things, and an understanding between the several parties more cordial in its nature than has of late prevailed. With respect to **WASHED WOOL**, Knott Wool was purchased at from 15d. to 16d. per lb.; while the quotation for Dorset Horn, is from 16d. to 17d.; and Marsh Wool, from 17d. to 18d. per lb. As regards **SORTS** prices are steady, the quotation being, for **SHORTS**, Coarse and Short Coarse, from 8d. to 8½d.; Broad Head, 9d. to 9½d.; Kent Head, 10d. to 10½d.; Red, Green, and Pinions, 10½d. to 11d.; Fine Head, 11½d. to 12d. per lb. **Stripe Wools** are, North Devon Stripe, from 14½d. to 15d.; Cornish Stripe, 15d. per lb. **FELL WOOLS.**—The demand in the up-country markets for short fine Fell Wools is considerable, and the quotation for these is 14d. per lb. Long Wool, of fine quality, likewise, is on free sale, at a quotation of 15d. per lb. Ordinary parcels of Skin Wool must be quoted at from 11½d. to 12½d. per lb. Tops are from 19½d. to 20d. per pound.

WAKEFIELD, Feb. 22.—We do not report any material alteration in the trade; the demand dull, and though in the few sales made, prices are rather in favour of the buyer, there is not a quotable difference from last week.

LIVERPOOL,

SCOTCH, FEB. 23.—There continues to be a very limited inquiry for Laid Highland wool, there has been one or two small lots sold at our lowest quotations, but which we believe was refused for a large lot. There has been several inquiries for white Highland, and one small lot lately imported realized our highest quotation. In cross and Cheviot wool, our stocks of which consist principally of unwashed and heavy laid there has been nothing doing, and, in the absence of demand, continue our quotations as before.

Per Stone of 24lbs.	s. d.	s. d.
Laid Highland Wool, from....	12 0	to 12 3
White do. do. (scarce)....	14 6	15 0
Laid Crossed do.	13 0	14 0
Washed do. do.	15 0	16 0
Laid Cheviot, do.	17 0	18 0
Washed do. do.	22 0	24 0
White do. do.	33 0	35 0

FOREIGN.—Although the accounts from Yorkshire and the manufacturing districts generally were of an

unfavourable nature, there were more enquiries for foreign Wool this week, but holders were unwilling to submit to any great reduction, and the quantity sold was in consequence trifling. The imports this week were principally confined to Peruvians. Import, this week, 2,830 bags; previously this year, 7,223 ditto: total, 10,053 bags.

SCOTCH.

Per Stone of 24 lbs.	FEBRUARY 1.		MARCH 1.	
	s. d.	s. d.	s. d.	s. d.
Laid Highland Wool, from.	12 6	to 13 0	12 0	to 12 3
White Do. Do.....	14 9	15 0	14 6	15 0
Laid Crossed Do.....	14 6	15 6	13 0	14 0
Washed Do. Do.....	16 0	17 0	15 0	16 0
Laid Cheviots.....	17 6	18 0	17 0	18 0
Washed Do.....	22 6	24 0	22 6	24 0
White Do.....	34 0	36 0	33 0	35 0

FOREIGN.

FEB. 25.

Next to nothing is doing in foreign wool; notwithstanding that large portions have been for the present withdrawn from the market. About 1,000 bales have been imported in the Port of London since Monday last.

Electoral Saxony wool, from 4s. 6d. to 5s. 2d.; first Austrian, Bohemian, and other German wools, 3s. 4d. to 4s. 4d.; second do., 2s. 4d. to 3s. 2d.; inferior do. in locks and pieces, 2s. to 2s. 6d.; German lamb's do., 2s. 0d. to 3s. 0d.; Hungarian sheep's do., 2s. 2d. to 3s. 0d.; Leonesa sheep's do., 2s. 4d. to 3s. 0d.; Segovia do., 1s. 10d. to 3s. 0d.; Soria do., 2s. 0d. to 3s. 2d.; Caceres do., 2s. 2d. to 3s. 0d.; Spanish lamb's do., 1s. 8d. to 2s. 8d.; German and Spanish cross do., 2s. 0d. to 3s. 2d.; Portugal sheep's do., 2s. 0d. to 3s. 2d.; do. lamb's ditto, 1s. 6d. to 2s. 0d.; Australian, fine crossed do., 2s. 0d. to 3s. 6d.; do. native sheep's do., 1s. 6d. to 2s. 7d.; Van Diemen's Land, native sheep's do., 1s. to 2s. 4d.; and Cape of Good Hope do., 1s. 4d. to 3s. per lb.

LEEDS, Feb. 22.—The Foreign Wool market is yet unrelieved of the dulness and inactivity that have lately depressed it; and being unoperated upon by demand, only nominal prices can be quoted. The continuance of stormy weather prevents considerable arrivals from Germany. In English Wool there has not been any material alteration since our last week's report, either in demand or prices.

Wool on which the Home Consumption Duties have been paid at London, Liverpool, Bristol, and Hull, during the last week:—

WOOL.	This Year, previous to last week.	Same time in the last Year.
Spanish, London..... lb.	150432	475800
Australian, do..... lb.	430800	69305
Other Sorts, do..... lb.	1248179	1508560
Liverpool..... lb.	1379859	—
Bristol..... lb.	—	—
Hull..... lb.	453112	792662

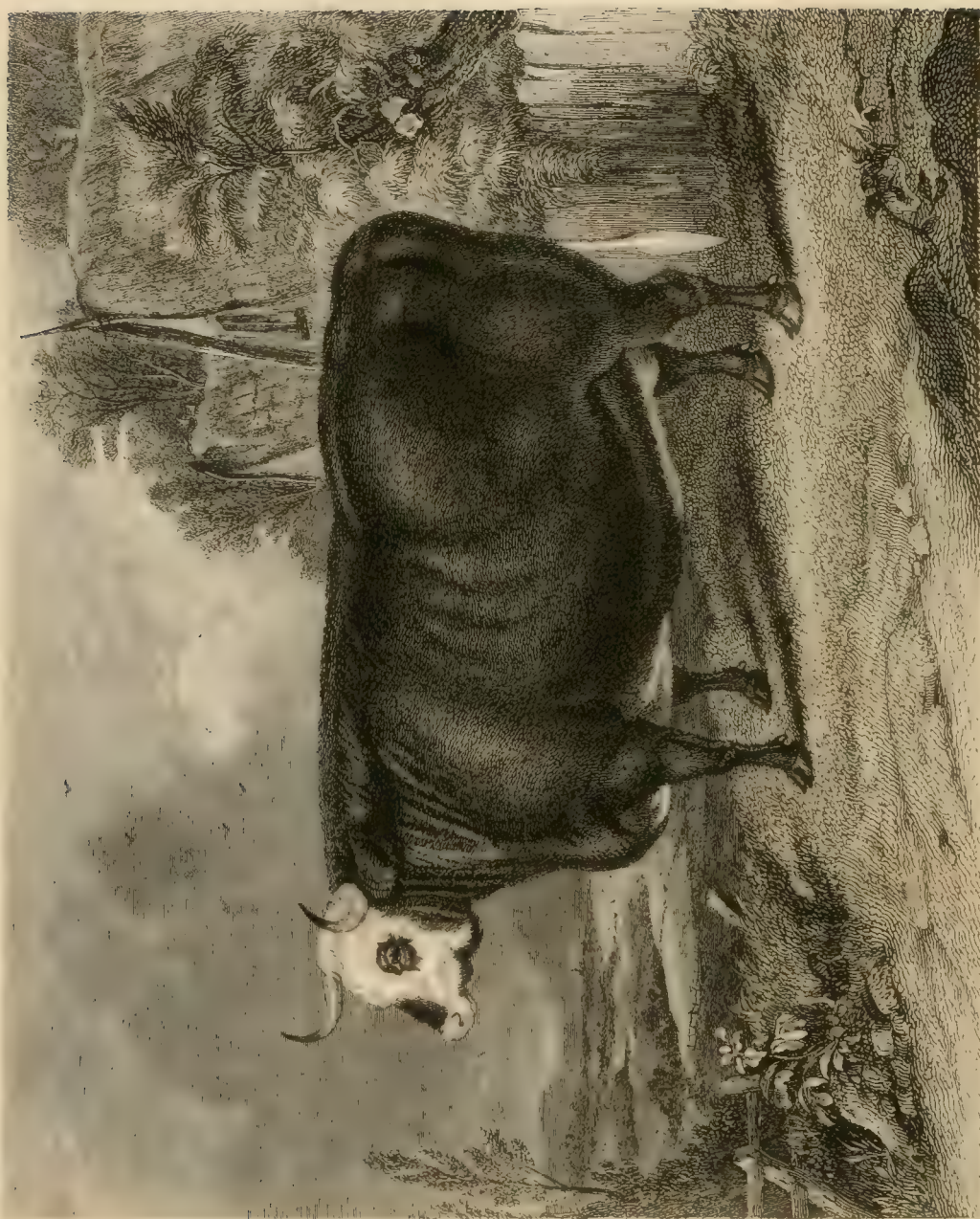
POTATO MARKET.

SOUTHWARK WATER-SIDE, FEB. 25.

The supply of Potatoes to the Waterside during the past week has been liberal from all parts, including considerable arrivals from the Channel Islands. The following is a statement of particulars, viz.:—From Yorkshire, 1001 tons; Jersey and Guernsey, 1169; Scotland, 386; Devons, 495; Wisbeach, 150; Kent, Essex, and Suffolk, 260; making altogether a total of 3226 tons.

PRESENT PRICES.

Per ton.	Per Ton.
York Kidneys ..—s. to —s.	Jersey Whites ... 50s. to —s.
Reds ... 70s. to 80s.	Wisbeach Reds .. 50s. to 60s.
American Natives..... —s.	Ditto Whites —s.
Scotch Red 70s. to 75s.	Kent, Essex, and Suffolk Whites .. 60s. to 70s.
Devons do. 70s. to —s.	Kent Kidneys..... —s.
Jersey and Guernsey Blues —s. to 60s.	Irish —s.



THE FARMER'S MAGAZINE.

APRIL, 1839.

No. 4.—VOL. II.]

[NEW SERIES.

THE PLATE.

The Ox, the subject of our first plate, was the property of John Buckley, Esq., of Normanton Hill, near Loughborough, was exhibited by him at the late Smithfield Show, and obtained a prize. He was got by Mr. Price's "Wizard," d. by "Young Woodman," g. d. "Nell," out of a Cow, bred by the late Mr. Benjamin Tomkins, of Wellington Court, Shropshire.

THE MARQUIS OF TWEEDALE'S MACHINE FOR MAKING DRAIN- TILES.

It was our intention to have given in this number an article descriptive of the mode of laying draining tiles, with a detailed statement of the expense, and some practical instances of the increased produce obtained from lands so drained; but we have unfortunately been disappointed in the receipt of engravings, without which the article would not be complete: we must therefore claim the indulgence of our subscribers for postponing the publication to our next number.

MR. HANDLEY'S DRAINAGE BILL.

Fully satisfied that the soil of the United Kingdom, if properly managed, would, to speak within compass, provide food for a body of people exceeding in numbers the present population by one-half, we always hail, with infinite satisfaction, any measure or proposition which has for its object, an end so desirable as that of increasing the amount of our agricultural produce. The two great means by which that important object can be best promoted, as it seems to us, are, improved management of the old lands, both as regards stock and cultivation, and the bringing into cultivation lands,
OLD SERIES.]

which, from a variety of causes, have never yet been brought under the plough. As regards improved management of the old lands such attention is now given to the adoption of a better rotation of cropping, thorough draining, subsoil ploughing, the selection of a better breed of animals, of better sorts of seeds and roots, of improved implements, &c., &c., that a great increase must take place in the acreable produce of those lands. In respect to the bringing into cultivation lands hitherto waste, it may be presumed that such lands are of two kinds, light lands, weak in staple, and which have been in many cases very erroneously considered to pay better as sheep-walks, and lands of good quality, but not accessible to the plough nor scarcely to the hoofs of cattle, in consequence of an excess of moisture. Instances are not wanting where tracts of land of the latter kind contain the essence of the manure of the neighbouring high lands, washed down for ages from the hills into the valley below. The first step towards the cultivation of such land is draining. To enable the owners of land so situated to carry off the superfluous water, it is not sufficient that drains be cut in the land itself, but in order to obtain a proper outlet it becomes necessary to cut through lands belonging to other persons. This step cannot be taken without the authority of an Act of Parliament, the obtaining of which would swallow up a sum which would go far towards making the required drainage. It is quite true that many cases may be pointed out where, notwithstanding such expence, the result has been highly satisfactory. We
S
[No. 4.—VOL. X.

might instance the *quondam* fens in Cambridgeshire, in Lincolnshire, the moors in Somersetshire, and in many other parts of the kingdom. The thousands of enclosures of wastes, which have been made during the last fifty years, have been effected under circumstances similarly disadvantageous. That, however, is no argument for the continuation of a serious impediment to cultivation. We may here be permitted to observe, that one of the greatest improvements in modern legislation is that of passing general bills, under the powers of which the inhabitants of any locality may carry out a contemplated measure of improvement without being compelled to run the risk of incurring charges in seeking to obtain an act of Parliament for effecting a useful object, and which may be defeated by the activity of some interested individual mustering a few friends to oppose a second reading of the bill. The general bill for facilitating the enclosure of common field lands is one of the best measures which has received the sanction of the legislature, but the bill "for facilitating the drainage of lands in England and Wales", which we noticed in our paper of the 11th Feb., and which Mr. Handley obtained leave of the House of Commons on Monday last, to bring in, is one which will, in our opinion, effect an amount of improvement in the productive powers of a very large proportion of the land of this country, which we will not venture to state lest we should be set down as visionary. The benefits derived from the cutting main drains for carrying off the surplus water from particular tracts of land, will not be confined to the proprietors of those tracts; they will be grand channels through which the water on the adjoining lands may be more readily carried off, and will induce the owners of old lands to effect an improvement by draining, which, without that assistance might have been imperfect. The mode of proceeding to effect a drainage as proposed by this bill, is similar to that in the Common Fields Enclosure Act, the consent of the owners of two-thirds of the lands to be drained being required before any steps can be taken. Provisions are introduced to protect the interests of all parties, and the greatest precautions taken to guard against the abuses which have sometimes been perpetrated under the authority of private bills for the like purposes. We see no reason to doubt that this bill will, under the auspices of Mr. Handley, receive the sanction of the legislature in the present session, in which case the honourable Member will not only have given another instance of his zeal and attention to the interest of agriculture, but will have set an excellent example to every practical farmer in the kingdom by shewing that if he seeks protection for home-grown produce, he is prepared to adopt energetic measures for increasing the supply in proportion to the demand.—*Mark Lane Express.*

EPITOME OF A BILL FOR FACILITATING THE DRAINAGE OF LANDS IN ENGLAND AND WALES.

PREAMBLE—Recites that there are many lands which are subject to be overflowed with water, and that it would be advantageous to the pro-

prietors, if they were enabled by a general law to drain the same.

- ENACTS**, 1 That certain words in the act shall be interpreted as therein mentioned.
- 2 After a map or plan of lands liable to be flooded, shall have been approved as after-mentioned, the owners of two-third parts in quantity of land included in such map, may effect a drainage,
- 3 Tenants in fee-simple, fee-tail, for life or lives, or for any other estate of freehold, or for years determinable on lives, or for any term whereof 100 years shall be unexpired, and also copyholders shall be deemed proprietors, for the purposes of this act.
- 4 Where such proprietors labour under any disability, the guardians, husband, and committees shall be deemed competent to act as proprietors.
- 5 Proprietors of two-thirds, to testify their consent to drainage by signing an agreement in writing.
- 6 Meeting of proprietors to be called previously to such drainage.
- 7 Consent of a tenant in remainder necessary in certain cases.
- 8 Consent of archbishop, or bishop and patron, necessary where any lands belong to, or are held in right of any benefice.
- 9 Benefice in the gift of the crown, and above the value of 20*l.* a year in the King books, the consent of the Lord High Treasurer or the First Commissioners of the Treasury to be obtained.
- 10 Where under 20*l.* a year, the consent of the Lord Chancellor to be obtained.
- 11 Where any proprietor is desirous of draining, he may cause a map to be made and deposited for inspection with the clerk of the peace, and a book of reference to accompany the same, containing names of owners, and description of lands proposed to be drained. The clerk of the peace is to permit any person to inspect the same, and make extracts on payment of 1*s.* For making any map or plan, as last aforesaid, any surveyor or surveyors may enter lands without interruption.
- 12 Notice of depositing map and book of reference, to be given in some newspaper, usually circulating in the county wherein the lands to be drained are situated, for three successive weeks, and where lands extend into more counties than one, there shall be deposits and advertisements in each.
- 13 After map and book of reference have been deposited, and notice given, proprietors of not less than one-fourth of lands included in the map, may call a meeting to take the drainage into consideration, by notice to be affixed days before such meeting on the outer door of the churches, or in some public place in the parish or parishes and by an advertisement, to be inserted twice, in some newspaper usually circulating in the county where the lands lie.
- 14 Majority of proprietors present, to elect a chairman who shall proceed to ascertain the quantity of lands, with power to adjourn in case the parties present do not possess two-thirds.
- 15 Proprietors of two-thirds who shall have consented, (and after such meeting as aforesaid shall have been held) to appoint a commissioner or commissioners for effecting drainage.
- 16 In case of death, refusal to act, or incapability

- of any commissioner, proprietors of two-thirds, to nominate fresh ones.
- 17 In all cases where two commissioners are nominated, an umpire to be appointed before they proceed to business, with power to renew appointment in case of death, &c.
 - 18 In case of difference of opinion between the commissioners, the matter to be determined by the umpire.
 - 19 In all cases in which more than 2 commissioners are appointed, the majority shall act and exercise powers.
 - 20 Commissioners to appoint clerk and surveyor with power to remove and reappoint when lands do not exceed acres, commissioners may act as surveyor.
 - 21 Commissioners and umpire to make declaration, before they act, faithfully, impartially, and honestly, to execute the powers of the act.
 - 22 Commissioners or umpire making false declaration, guilty of a misdemeanour and punishable.
 - 23 Commissioners or umpire acting without making and subscribing declaration, to forfeit 50*l*.
 - 24 Commissioners or umpire to give notice of meetings by posting same on the church doors of each parish or place where lands to be drained are situate, or if no such church or chapel, then in some public or conspicuous place, and also a notice to be given in some newspaper circulating in the county where the lands lie, ten days before such meeting.
 - 25 Adjournment of meeting may be made to some future day, not exceeding fourteen days from the day of adjournment.
 - 26 All meetings to be holden in one of the parishes wherein the lands to be drained, or the greater part of them are situate.
 - 27 All other notices to be given by commissioners or umpire shall be given by affixing the same on the church or chapel doors of the parishes or places where lands are situate, and if no church or chapel, then in some public place in such parishes or places, and also by advertising in a newspaper circulating in the county where lands lie.
 - 28 Proprietors to pay their own expences at meetings.
 - 29 Major part of proprietors may agree for payment of a gross sum to commissioners, &c., or umpire, for their services.
 - 30 Proceedings of commissioners to be entered in a book.
 - 31 Commissioners or umpire may cause a survey to be made of the lands comprised in the map approved as aforesaid, and may either adopt the map so approved, or cause another to be made.
 - 32 The proprietors of four-fifths in quantity of lands proposed to be drained, may agree to adopt any previous map or plan.
 - 33 Allowance to commissioners or umpire for their trouble a sum not exceeding £ for each day they may be employed.
 - 34 The proprietors of four-fifths in quantity may agree upon rules &c. for guidance of commissioners or umpire about the drainage.
 - 35 Such several agreements may be appealed against to the quarter sessions, ten days' notice to be given.
 - 36 If decision in favour of appellant, any party who shall have consented to agreement for drainage, may withdraw his consent from such agreement, by giving notice in writing to commissioners or umpire at any time within twenty-one days after decision, and if by such withdrawal the proprietors of two-thirds shall not remain, the agreement for draining shall cease.
 - 37 Commissioners and umpire to have power to enter upon lands to make surveys, assessments, banks, drains, buildings, and other necessary works.
 - 38 Commissioners or umpire to determine differences between any parties interested, touching their rights and interests in lands to be drained, or relating to the said drainage, but not to determine the title to any lands whatsoever.
 - 39 Commissioners or umpire authorised to make such works of drainage as they may think necessary.
 - 40 Commissioners and umpire may enter upon lands within or contiguous to the lands proposed to be drained, and dig for materials, on making compensation to the owners or occupiers.
 - 41 Power to commissioners or umpire to make drains through land not proposed to be drained, due compensation being made for drainage done thereto.
 - 42 Power authorising commissioners or umpire to make and enter into contracts for making and completing works of drainage.
 - 43 Commissioners or umpire may purchase land, &c., included in the map approved as aforesaid, for the purposes of the act, on making compensation, to be settled by a jury, in case the parties cannot agree.
 - 44 Powers for incapacitated persons to sell land for the purposes of the act, and to convey the same.
 - 45 Satisfaction to be made and accepted, and in case the parties cannot agree, the amount or value to be ascertained and settled by a jury.
 - 46 Where persons shall neglect or refuse to treat for the space of thirty days, after notice given in writing, the commissioners or umpire may issue warrant to sheriff to summon a jury.
 - 47 Jurors may be challenged.
 - 48 Witnesses to be summoned and examined on oath.
 - 49 Commissioners and umpire authorised to administer oaths.
 - 50 Jury to assess the sum of money to be paid for the purchase of lands or the recompence to be made for damages that may be sustained.
 - 51 Verdict of the jury to be conclusive.
 - 52 Compensation to be apportioned by the juries between particular interests.
 - 53 Witnesses not appearing or refusing to be sworn, or any juryman refusing to give verdict, to forfeit a sum not exceeding 40*s*., to be levied by distress.
 - 54 Expences of jury to be paid by commissioners or umpire, if verdict given for more than what has been offered by such commissioners or umpire, but if for no more or less than the sum offered, then by the person interested in the lands in question.
 - 55 Compensation money, when amounting to or exceeding 200*l*., to be paid into the Bank of England, pursuant to the 1st Geo. 4th, intituled "An act for the better securing monies and effects paid into the Court of Exchequer, at Westminster, on account of the suitors of the said court, and for the appointment of an Accountant General and two Masters of the said Court, and for other purposes," to be paid to the persons who would have been entitled

- 56 When less than 200*l.* and amounting to or exceeding 20*l.*, the same shall, at the option of the persons entitled to the rents, be paid into the Bank of England, to be applied as before mentioned, or, at the like option, be paid to two or more trustees, to be nominated by the persons entitled, to be applied by such trustees for the uses and purposes of such persons interested as aforesaid.
- 57 When less than 20*l.* to be paid to or for the use and benefit of the persons entitled to the rents and profits of the lands so purchased.
- 58 The court may order reasonable expences of purchasers to be paid by the commissioners or umpire.
- 59 Premises to vest in the commissioners or umpire, upon payment of the money accepted or awarded, when persons refuse to execute conveyances, or when conveyances cannot be obtained, where persons entitled cannot be found or shall not be known, the purchase money to be paid into the Bank of England, to be disposed of by the Court of Exchequer, to the persons entitled, on making claim.
- 60 On payment of the purchase money of lands, the commissioners or umpire to be deemed in actual seizing.
- 61 In case of questionable title of persons to money paid into the Bank of England, the person who shall have been in possession of the lands at the time of the purchase, shall be deemed to have been lawfully entitled to such lands until the contrary shall be shewn to the satisfaction of the court.
- 62 Estate of mortgagees to vest in commissioners on payment of principal and interest.
- 63 Or if such principal and interest exceed the value of the property, then on payment of the value.
- 64 And mortgagees to be foreclosed.
- 65 Power to commissioners or umpire to enter and take possession of lands &c., on payment or tender of purchase money.
- 66 Commissioners or umpire to determine differences between the parties interested or claiming to be interested in any lands, to be included in any drainage, or touching any matter relating to the drainage.
- 67 Persons summoned by commissioners and refusing to give evidence, to be punished by fine, not exceeding 10*l.*
- 68 Commissioners or umpire upon the hearing and determination of any claim, may award and assess costs to be paid to the party in whose favour such determination shall have been made.
- 69 Authorising and allowing parties to try their rights by an issue at law.
- 70 If no action brought, the determination of the commissioners or umpire to be final.
- 71 Death of parties not to stay proceedings at law.
- 72 No difference or suit touching the matters aforesaid, shall delay the commissioners or umpire in the execution of the powers vested in them by this act.
- 73 Death of any parties interested not to suspend the execution of this act.
- 74 If any person in whose favour any determination as aforesaid shall have been made, and against whom any such action might have been brought, if living shall die, before any such action brought, any person who might have brought such action against the person so dy-

- 75 Power for commissioners or umpire to sell lands not wanted for the purposes of the act, the first offer to be made to the original or adjoining owners.
- 76 In case of difference as to the price, then the price to be ascertained by a jury in manner directed with respect to disputed value of lands to be taken, and the costs of hearing and determining such difference to be paid in manner before directed with respect to such purchases made by commissioners or umpire mutatis mutandis.
- 77 Commissioners or umpire as soon as conveniently may be after works of drainage shall be completed, to make an award directing in what proportions the occupiers or owners of lands drained, shall contribute to the costs of drainage works, and in maintaining and keeping the same in repair, and in such award shall be included all such orders and regulations relating to such works of drainage as are by this act authorized to be made.
- 78 A schedule to be annexed to the award describing the lands intended to be drained, and liable to be assessed and taxed, and to whom same belong, and in what proportions such assessment or rate is to be borne, together with a map or plan of such lands.
- 79 Nevertheless, in fixing such proportions, the commissioners or umpire shall have especial regard to the different degrees in which the lands shall be benefited by such works of drainage, unless with the consent of the proprietors of four-fifths of the lands, the commissioners or umpire shall think proper to direct that such assessment, rate, or tax shall be borne and paid by an equal acre tax.
- 80 Persons neglecting to pay proportion of costs and expences aforesaid, (after giving thirty days' notice before such payment shall be required) the commissioners or umpire may issue warrants to cause same to be levied by distress.
- 81 Draft of the award to be lodged with Clerk of the Peace within next, after the making thereof, together with schedule annexed, and notice thereof to be given once in each week for three successive weeks, in one or more newspaper or newspapers, circulating in the counties where lands are situate, and such notice shall require all persons who may desire to lodge objections to the award to lodge same before the time specified in such notice.
- 82 Commissioners or umpire to hear and decide objections (if any) to award, and to finally settle same.
- 83 The award when settled to be ingrossed and signed and sealed by the commissioners or umpire, and to which shall be annexed a copy of the schedule before mentioned.
- 84 Award and schedule to be deposited with Clerk of the Peace; who is to deposit same amongst the records of the county, and when so deposited shall be binding on all persons, and shall be evidence of itself that it was duly made.
- 85 Works of drainage to be made in pursuance of this act to be vested in commissioners or umpire until their power and authority shall cease, and until trustees shall be appointed, and after such appointment then the said works to vest in the said trustees, and such commissioners or umpire or trustees are authorized to bring ac-

- tions and prefer indictments in respect of said works.
- 86 The herbage of banks to be the property of the proprietors or occupiers of the lands adjoining thereto.
 - 87 Nothing in this act shall prejudice or injure the drainage of adjoining lands.
 - 88 After execution of the award, powers of commissioners or umpire to cease.
 - 89 Commissioners or umpire to call a meeting of the proprietors of lands months at least before the date and execution of the award, by notice to be given as before is mentioned to make choice of trustees for the further execution of this act; such trustees shall not be less than three nor more than seven in number, and shall continue in office years, and until new trustees are appointed.
 - 90 At the end of every years new trustees shall from time to time be chosen by the proprietors at a meeting to be for that purpose from time to time holden.
 - 91 The first and all other trustees to be chosen by a majority in value of the proprietors, such value to be determined according to the proportions of the assessment or rate borne by them respectively.
 - 92 Trustees empowered to make, maintain, and support such works of drainage as they shall think necessary, and to execute all other the powers of this act which shall not have been fully completed by the commissioners or umpire.
 - 93 In case of refusal to act, incapacity, or death of trustees, new ones to be appointed at a meeting to be called for that purpose.
 - 94 Trustees to hold annual meetings, and fix amount to be raised for repairs, &c., for the ensuing year.
 - 95 Assessments to be recovered by distress and sale; the party refusing to pay being first summoned before a justice.
 - 96 Tenants to pay the taxes and deduct them from their rents.
 - 97 In case of non-payment of taxes, defaulters to forfeit 3s. 4d. in the pound.
 - 98 Upon the consent of the owners of the lands a drainage may take place without the intervention of commissioners.
 - 99 Meeting to be called for that purpose, and an agreement entered into, and at the same meeting trustees to be chosen, who are authorised to proceed with drainage in the same manner as if commissioners had been appointed.
 - 100 The agreement shall set forth a description of the lands and also the rules, orders, and regulations for making, maintaining, and supporting works of drainage, and the proportions of the rate to be borne by each proprietor.
 - 101 The agreement when signed and sealed to be lodged with the clerk of the peace, together with a map or plan thereto annexed, and notice of such deposit to be given three times in three successive months in newspaper, and a like notice to be affixed on church or chapel doors for three Sundays.
 - 102 Power to borrow money on the credit of the rates, to be paid off in years from the time of borrowing, and a rate to be fixed for paying off such annual instalments.
 - 103 Mortgage securities may be assigned.
 - 104 Power to pay off and borrow at a lower rate of interest.
 - 105 No rate to be assessed for paying off sums borrowed without the consent in writing of in number and value of proprietors present at a meeting to be called for that purpose, notice of such meeting to be given in the newspaper.
 - 106 Power enabling commissioners, umpire, or trustees to appoint officers officers are to give security.
 - 107 Same person is not to be clerk and treasurer.
 - 108 Accounts to be kept by clerk in books to be provided for the purpose.
 - 109 Officers to account to commissioners or umpire or trustees when required.
 - 110 Commissioners, &c., to pass their accounts once a year before three justices.
 - 111 Penalty for opening cloughs and letting off water, not exceeding 10*l*.
 - 112 Persons destroying works guilty of felony.
 - 113 Justices empowered to proceed by summons for recovery of the penalties.
 - 114 Proceedings before justices not to be quashed for want of form.
 - 115 As to the recovery and application of penalties and forfeitures.
 - 116 No action to be brought against any person acting in the execution of this act, until after notice has been given specifying the cause of action.
 - 117 No action to be brought after tender of sufficient amends.
 - 118 If no tender has been made, money may be paid into court by leave before issue joined.
 - 119 Power enabling parties who think themselves aggrieved to appeal to the quarter sessions.
 - 120 All actions, suits, &c., to be brought against any person for anything done in pursuance of this act to be commenced within six months.
 - 121 The general saving clause.

AGRICULTURE.—It affords us sincere pleasure in noticing, that the Messrs. Drummond, of the Agricultural Museum here, have, within these few weeks, been entrusted with the execution of an order for ploughmen, horses, implements, seeds, &c., intended for an experimental farm in Gloucestershire, where, we understand, everything is to be conducted with a strict adherence to the Scottish system of husbandry. Besides many other articles of minor import, the commission included 4 ploughmen, 9 horses, 6 carts, 8 sets of cart and plough harness—common, Smith's subsoil and green crop ploughs, harrows, draining implements, sowing machines, Drummond's reaping scythes, &c. From what we have heard from judges, the various specimens are such as to do no discredit to the spirited establishment from which they have issued. A notion appears to be prevalent that the horses might have been heavier, but it seems ordinary farm-horses were wanted. We consider such an outfit as an honour conferred on the district, in as far as its practical farming and manufacture of agricultural implements are concerned; and while we hope the whole may reach the place of destination in safety, we wish every success to the truly patriotic object. This important commission having been completed, the ploughmen, with their charge, under the superintendence of a young gentleman from England, set out in travelling order on the forenoon of Friday last, during the bustle of the weekly market. Their departure excited very considerable interest, calling forth the best wishes of all. We understand the party have taken the land route by Carlisle, Manchester, and Warrington, and expect to perform the journey, which is nearly 400 miles, in about 20 days.—*Stirling Observer*.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—In the last number of *Farmers' Magazine*, I observed some observations on "Agricultural Colleges" from a pamphlet bearing that title, in which the writer proposes a company of shareholders to erect an establishment, and to rent a quantity of land to be cultivated by the scholars that may be sent to learn there: and an institution of this kind is proposed to be established in Kent by subscription. In the same Magazine I read a letter from Mr. Grey, of Dilston, on subsoil ploughing, in explanation of an apparent difference of opinion between that gentleman and the Marquis of Tweeddale. Mr. Grey is well known as an eminent breeder and cultivator, and one of the most influential and intelligent gentlemen in that part of the kingdom, and Lord Tweeddale is no less conspicuous for his judgment and practical experience, and great zeal in agricultural matters.

The variance had arisen from his lordship having succeeded by trench-ploughing and by mixing the upper and under strata without damage, and from the consequent generalizing principle too common in the unthinking world, and with persons of sanguine dispositions, which supposes success in all cases of similar application, without advertent to the combination of different circumstances under which that application must be made, and on which the whole matter hinges. The quality of the substratum must at once decide if it should be turned up or not, and to this point his lordship had not adverted, as he had found it not hurtful in the course of his practice. Reasoning from analogy has in many such cases led to the most fallacious results, and circumstances must ever direct if any application be plausible and likely to produce the expected result, assisted by the judgment and experience of the persons concerned. Mr. Grey's letter sets the matter in its true light.

Mr. Grey adverts to the great importance of an agricultural college, and very justly observes that the subject must be a national instead of a local undertaking. It is certainly a very curious fact, that we have colleges and schools for education in all its branches, and none for instruction in agriculture, an art on which every other depends. Agriculture must precede every other art—we must have corn, wool, and cotton before manufactures can exist; they are the consequents, not the antecedents of agriculture, though both must flourish better when mutually assisted and supported by each other. The supply of food and raiment precedes every other want—in vain will we attempt to teach a starved human being—the physical wants must be supplied before the moral—if the means be not afforded of sending the boy to school, the schools are useless. The present practice of agriculture is wholly composed of the fortuitous results of observation and experience, and has not yet derived any assistance from chymical or physical theory. Nothing can be more desirable than the application of science to agriculture, and when we see the wonderful effects it has produced in manufactures, the conclusion seems natural to expect similar results from a similar application. But in arriving at this point, we arrive at the very point that constituted the difference between Lord Tweeddale and Mr. Grey on subsoil and trench-ploughing—"an application of a principle under different circumstances"—and this difference of circumstances is so great as to com-

pletely baffle every attempt yet made by our most eminent scientific men. The analysis of soils and of manures have been most correctly given, but no result follows for application; no information can be derived from that analysis how or in what quantities to mix them, so as to produce a greater result than is yet known, and any suggestions that have been offered, practice has mostly overturned. The application of science to manufactures is wholly different: the using of a new invention in a factory in the weaving or dyeing of cloth, is not liable to the many accidents that occur in farming practice to influence and mar the results, for there never can be any certainty that a process in farming can be performed under the same circumstances as when experimented and concluded upon by the chymist. But time and perseverance may work great changes in that, as it has done in many other subjects not long ago thought equally obscure. Mr. Grey wishes to increase the quantity of produce by every means that may be available, and to depend for remuneration on that quantity, and not on restrictive regulations to enhance its value. Here is an answer in one sentence to the multitude of essays, letters, and pamphlets on the subject of corn-laws; for if capital were properly applied to cultivation we would require no corn from abroad. This short and concise observation requires no commentary or illustration, and overthrows all the vagaries published on the corn-laws, for it is evident to any person that if our waste lands and arable lands were properly cultivated by our known means, all dread of an overgrowing population, and of a want of subsistence, are as idle and chimerical as the reveries of fathers and monks.

Most certainly nothing can be more desirable than a national institution or institutions, where the rising generation may be taught the most useful of arts; but the subject is beset with many difficulties both natural and artificial. The great diversity of soil and climate in any country constitutes one of the greatest, for a system may be most excellent in one part and wholly inapplicable in another. In the colleges instituted for teaching other arts, such as surgery and physic, the theory and practice are combined,—the student has only to walk from the professor's lecture-room to the hospital, where he sees practice in a large extent, and a practice which he can use in any part of the kingdom, uninfluenced by soil or climate, and the localities which perplex all farming operations. The engineer and the architect can erect an engine or an arch to suit any locality—the same form of a bridge, and the same locomotive engine will answer in any situation; and the manufacturer can adopt the same machinery for a certain purpose at home or abroad. But with the farmer the case is widely different; he has soil and climate to study, and a variety of circumstances which influence every operation; his crops, the produce of his labours, are at the mercy of the seasons; he has implements to adapt to the soil he cultivates, and grains and roots to the climate he inhabits. An institution would be required for every diversity of soil, or a central college for lectures and exhibitions, and farms in various parts of the kingdom, so as to comprehend the different soils and climates. This seems by no means impossible, provided it be made a national undertaking, and means be afforded; but, to have one farm or estate of 400 acres, where to teach the practice for a kingdom, is wholly ridiculous. Lectures may be delivered on universal practice, but it can

only be shown where it exists. The writer expects profits from the farm cultivated by the students; if this be the foundation of the institution the managers would adopt the means that are known to yield most profit; we would have little or no experiment, for experiments cannot be made to any extent without departing from profits at the present time. In such institutions I would lay aside profits altogether, and by continuing and repeating experiments a profitable result be arrived at by careful computation, and then sent forth to the agricultural world, not as suggestions to be tried, but as established facts for immediate and undoubted adoption. The dread of expense, and of loss by deviating from the established routine, constitutes an insuperable barrier at present among farmers, against, not only the instituting of experiments, but against the adoption of established facts. A number of years and a great majority of similar results are required to establish a fact in agriculture; rotations must be repeated in order to prove the profitable use of it, and of any plant or mode of cultivation we must have satisfactory proofs, not only of the success of one crop or trial, but of the relative merits in a system of feeding and cropping with our present practice. A manufacturer or a mechanic can establish from one trial the utility of any invention for his purpose; in a sheltered house the chymist can apply dyes for prints and cottons, but on the field a rainy day may overturn every expectation. Companies of shareholders are merely a system of selfish monopolies, wholly intent on gain, and in which a single spark of liberalism nowhere exists. Such an institution would soon become a scramble for profits per share—the labours of the students would be sold on 'Change by moneymongers, and such a system would be widely different from our similar institutions, and derogatory to the national character.

Upon the principle that it must be a national undertaking, as it is one in which all classes of society are equally interested, it must be endowed and supported by the national revenue, established on a broad and liberal basis, and supplied with teachers eminent for their knowledge, and chosen from regard to "merit" only. In this central college the scientific theory of the art, and the explanation of the different systems of practice in our kingdom and abroad would be given by capable men, and the students could repair to the farms in various parts of the kingdom chosen so as to comprehend the different soils and climates, and conducted by the best practitioners that can be found. These farms must be used solely for experiments, to test and prove every suggestion that science, theory, and practice may offer: if upon repeated trials they be found irreducible to practice, they will fall to the ground; if they succeed they would be sent forth as attested and valuable facts. The members of the central college and the conductors of the farms would be in constant communication, comparing and examining every suggestion and observation both by science and practice, and detailing to each other for the general benefit the results of reflection and experience. The results of their labours must be sufficiently vouched by correct computation, as being profitable facts under the existing circumstances of our social system; it is well known that great things may be done by a lavish expenditure of money, but unless attended with profit we cannot expect them, in fact they are wholly unfit to be adopted by those who depend for their livelihood

on remuneration for the use of their capital. To investigate and settle this primary point a sacrifice must be made, and on the experimental farms a small scale of trial would suffice to compare the relative cost and produce, and thus establish a fact. In vain will we write essays and pamphlets, and award premiums, unless the unerring test of experience be used, such labours have been and ever will be nearly useless. As I observed before, the student in surgery and physic walks from the lecture room to the hospital, and sees practised what he has heard read to him—he sees and assists in all cases of practice; but the student in agriculture may hear from the best lecturer and most distinguished agriculturist that can be found, a description of implements he has never seen, and if he did see, could not use them—he has heard a method of drilling described, but cannot go to the field and practise it. This is wholly owing to the want of a practical field, and has rendered such institutions nearly useless. And the sacrifice would be small, very small, when compared with the immense sums we have seen, and yet see squandered on fopperies and fooleries, and in upholding corruption and profligacy of the deepest dye. Two dairy farms, two or three clay farms, and three turnip farms, viz., loamy clays, sandy loams, and sands, and some of them of a mixed character of wheat clays and loams, might be found sufficient, and might be so chosen as to suit the different localities in the kingdom.

If ever such an institution be established, the first step must be, to kick sheer overboard the prejudice of men, and to level with the dust, that curse of the human race, the great barrier to improvements in all ages of the world. On every subject the greater part of mankind are biassed in favor of some particular way of thinking and method of performing any operation which they have adopted, and to which they have been accustomed, and of which very few are ever able wholly to divest themselves. Prejudice completely obscures our perceptive and intuitive powers, clogs our understanding, and perverts our judgment, and renders wholly useless the reasoning faculty conferred upon us as the distinguishing characteristic of our nature. No sound judgment can be exercised on any subject, or a satisfactory conclusion arrived at, where this pernicious propensity prevails: no dependence can be placed on the opinion of any man who allows his judgment to take precedence of his reason, and whose mind is wilfully shut against conviction. For the furtherance of any art, the great and essential desideratum is to combine theory and practice; and on this point the agricultural world (with some splendid exceptions) has floundered over head and ears in the mud. It is only of late years that our mechanics and our manufacturers have been able to combine them; but until that be effected, and as much as possible in the same persons, or by different persons being in constant and friendly intercourse, it is very evident the progress will be slow. Concurring causes may have contributed in giving grounds for the prejudices and bigotry so loudly and lavishly charged on farmers; though there appears to be no natural reason, they seem to inherit a very large portion of it. The natural difficulties that would seem to dim the prospective benefit of such an institution, must be dealt with and overcome in the best manner possible; though more formidable than in other cases, they certainly are not such as to forbid all expectations, or to debar the attempt being made. On the contrary, if properly esta-

blished and conducted, incalculable benefits might accrue. The members of the college must consist of men eminent for knowledge of every branch of education connected with agriculture, and one thoroughly versed in agriculture itself, and their employment would be to draw suggestions from the investigations of science to be transmitted to the farms for the test of experience. The conductors of these farms must be the most intelligent practitioners that can be found for the soils they have to manage; thoroughly acquainted with arable farming, and the suitable implements; our different breeds of stock; intelligent and open to, and able to comprehend and execute, the suggestions transmitted to them from the Central College. Until we have a field of tests, we do not know what invaluable discoveries may be hid in suggestions laughed at and neglected, or in those that may be made. That great absurdity has attended many of them, must be readily granted; but the wheat cannot be obtained without separating it from the chaff.

The greatest artificial difficulty, but one of our own making and consequently capable of being removed, is the influence of patronage in most similar institutions, and which appears stronger in government and national concerns than in those conducted by public or private bodies. Public opinion has done and may do much to repress it, but in our constitution of society there is scarcely any department of business, from the King on the throne down to the ploughman that tills the soil, where this many-headed hydra does not appear in some of its Protean shapes or forms; no lopping of the heads, or cauterizing of the wounds is sufficient to keep it under. Wealth created power, and the influence of that power will be exerted for sinister and selfish purposes, and though it be an evil clearly seen and pointed out, it seems to be almost inseparable from the constitution of the human race. In a sort of agricultural schools that have been established in Ireland, we have a fair specimen in the appointment of superintendents there of what may be expected, unless expressly guarded against by fundamental regulations, as is now done in our modern liberal institutions. Military gentlemen have been appointed to impart agricultural knowledge, but how they can be qualified to do so, is no easy matter to comprehend; but as it has been thought proper to teach the Irish people religion by dint of bayonet, and to pay tithes by powder and ball, it is probably the most effectual method to teach agriculture also by the same species of cogent argument and powerful persuasion. A farmer will hardly comprehend what knowledge of agriculture his son could derive from a colonel or a captain, though he may be capable of instructing him most amply in the etiquette and duties of military discipline. In Ireland these gentlemen have practical men under them to give instructions; but this is wholly reversing the process, for a superior in office is generally such a person as the underlings can look up to for information and direction; if he be not such a person, he ought not to be there. A farmer may as well be appointed to the command of a company of soldiers, and employ others to do the duties. In all civilized countries, and ever since the division of employment was rendered necessary by the increase of the human race, every art and science and even any general business has a time bestowed in the acquiring a knowledge of the practice, and the remuneration to the practitioner is generally in proportion to the time and expense used in the

acquisition. This general rule holds in every business of life; for the period of human existence is so short, and the competition in knowledge is so great, that it requires a lifetime of undivided attention to know one subject well: daily improvements and inventions are taking place, and require constant observation to add them to our former stock of knowledge. No man pretends to teach another mathematics unless he has been first taught himself; no person offers to teach another how to conduct a ship through the pathless ocean unless he has been practised in the art himself; it follows in a similar manner that no person can teach another the art of agriculture, or any other art, unless he has studied and practised that art himself. Such unqualified appointments are glaring "jobs," the effects of that patronage which has been the bane and ruin of our country, and of many others. But in such institutions it might be guarded against, at least in some degree, by vigilant attention to the regulations and proceedings. Agriculture stands still from want of capital and enterprise; the farmer is not warranted from his temporary interest in making an outlay on experiments beyond what prudence dictates, the landowner seems equally or rather more averse, though he has a very different security for so doing in his property secured to his posterity; it must be undertaken therefore and advanced at the national cost, as a national undertaking, and for the national benefit.

J. D.

March 6th, 1839.

THE CORN LAWS.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—Keep your paper free from party prejudice on the all-important subject of the corn laws—the most vital question—as it affects both the producers and consumers of grain, whose interests I have ever considered as inseparable. It is a subject to which my earliest attention was drawn, and the opinions I then formed—near sixty years experience since have been daily adding strength and confirming.

I trust you will not think the insertion of a few facts bearing on the subject, irrelevant, and I will endeavour to be as concise as possible.

As soon as the present corn law had been read the second time in the House of Lords, in June, 1828, I considered it would become the law of the land, and I gave an order for a Dantzic merchant, whom I had seen in England a few years before, to buy me several cargoes of the very best Dantzic white wheat, such as they call *prime*, and not to regard price, however high, provided it was the very best that could be had for money. He executed my order on the 8th of July, 1828; the average price he paid amounted to about 28s. 6d. per quarter, but a much larger measure than our imperial, as it measured out considerably more, after lying in granary in England about a year and a half. The average return of the price in England for wheat, when I gave the order was under 54s. per quarter. When the house to which I had desired it to be consigned informed me of the purchase, it was worth 50 per cent. more than it was bought at. Before it arrived in England, it was worth double the price it cost, and before the bills became due, which were drawn at three months, it was worth three times the cost price, after paying all expenses coming against it—freight, insurance,

commissions, &c., &c. Had the average price of English wheat remained at 54s. per quarter, so superior was its quality, that I could have paid 32s. 8d. per quarter duty, (the duty by the present corn laws when the averages are 54s. per qr.,) and have got a very handsome profit, after paying every charge whatever that came against it. Before the duty came to 1s. per quarter, there was wheat of like quality sold in Mark Lane at 112s. per quarter.

I had purchased this wheat to prove the fact I had asserted, that the best foreign wheat could at all times afford to pay 32s. 8d. per quarter duty, when our prices averaged 54s. per quarter. I kept this wheat in granary for more than a twelvemonth, and when the average price of wheat at Newcastle was returned at 52s. per quarter, I gave an order for the sale of my Dantzic wheat, and it was sold at an average of about 84s. per quarter; 32s. per quarter more than the average of Newcastle, in the autumn of 1829.

Had I purchased wheat in Dantzic some months earlier than I did, it might then have been got above six shillings per quarter lower than it was bought at, but the then law in England improperly prohibited the sale till the averages reached 80s. per quarter. So confident was I that protection given to agriculture was the only way to make corn cheap, that I told the Newcastle merchants, when they asserted in 1815, that if wheat was protected up to 80s. per quarter that it would never be less than 80s. per quarter, that it was the surest way to keep it under 80s. per quarter. Now in August, 1812, a respectable miller on a large scale, bought wheat in Newcastle market at 208s. per quarter; and on the same day of the same month in 1822, he bought wheat of a like quality and weight at 38s. per quarter, an unanswerable proof that protection to agriculture is the only way to make corn cheap. On this account have I ever advocated protection, and that labourers in agriculture might always have full employment and adequate wages. It would do little for them to have cheap corn if their wages were inadequate to purchase it, however cheap. Now it is a well known fact that agricultural labourers have not earned, the last seven years, one half the wages paid to manufacturing labourers. Is it not also a fact, that the manufacturing population have since the peace more than doubled; while in the purely agricultural districts they have considerably diminished? In the district from which I write they have diminished 40 per cent.; is not this an incontrovertible fact that the manufacturers have been doing well, while the agriculturists have not? Many farmers whom I have known to have raised themselves by industry and carefulness from being labourers in husbandry for 30 years, during the high time in the late war, and from their savings commenced farming, with large families of children, grown up to men and women, to perform the labour; and who with their families in the hard times, from agricultural depression, lived solely on potatoes and salt for their dinners, using neither butchers' meat, ale, or any other costly article, either for food or clothing, and yet were obliged to sell their all, and in their old age themselves and families again become day labourers, and many of these have emigrated.

I did hope, after enduring privations and distress that never had a parallel in England at any period whatever, that the agriculturists might have been permitted a short breathing time to have recovered their strength; and if the legislature only extend to them the small protection they now enjoy, which is the least they can have to induce them to make the necessary exertion they would soon, by additional

skill and knowledge, produce double the present produce, the only sure way of making their produce cheap.

With the incontrovertible facts which I have stated respecting the purchase of foreign grain, I make an appeal to every person engaged, or in any way connected with agriculture, what must their condition become if the duty be as M'Culloch proposes as the highest FIXED DUTY *six or seven shillings per quarter for wheat*, and a proportional duty on other grain. Would this "be erring (as he says) on the side of too much protection rather than that of too little?" Or his other assertion, "That the just rights of the agriculturists and every other class would, with a duty of 6s. or 7s. per quarter, be maintained unimpaired"!!!

Was not a duty of 30s. 8d. per quarter on wheat, when the average was 56s. per quarter, paid to a considerable extent only autumn twelvemonth? and why was it paid? because the corn merchants, by so doing, lowered the price in England, by bringing their foreign wheat upon the market, immediately thereby, to 51s. per quarter, and when they had caused this reduction in England, aware that the English wheat crop of 1837 was far under an average, they bought abroad on the more advantageous terms, to more than ten times the amount that they had previously sold. Had the opulent merchants of Manchester then purchased foreign grain in exchange for their manufactured goods, and bonded the foreign grain, till the duty came to 1s. per quarter, they might have tripled their capital so exchanged, (being what they now want,) and no one would have or could have found any fault with them in so doing; the law allowed them to do so, and with the present laws they may do so as often as they like, (if they have the sagacity to choose the proper time to do so;) had they done so a year ago, they might have prevented wheat rising to its present price. If, therefore, they really intend to accept foreign grain in exchange for their manufactured goods, there is no law to prevent their doing so. The corn law of 1815 improperly prohibited foreign grain being sold in England till the price reached 80s. per quarter, now it can be sold at any time, on paying the duty. The present corn law was framed to serve the corn-merchant, and not the agriculturist; this I exposed in 1827, in an address I directed to every member of both Houses of Parliament, after the late Mr. Canning had brought in his corn bill. In the agriculturists, I include land-owners, occupiers, and labourers, and all those dependent on them for their livelihood; they are, by far, the largest body in the community, and all they seek is the welfare of the whole community.

The average price of wheat for the seven years ending on Thursday before Christmas day, 1838, is declared in the Government Gazette to be 52s. 2d. per quarter. Now, I ask, was ever the price so low as the last seven years, in comparison to the earnings of the labouring classes of the whole community? *Never at any period.* I again ask, was the loss of capital engaged in agriculture ever equal to what it has been the last ten years? *Never at any period.*

Surely the legislature cannot have forgot the numerous petitions that were sent to them only three years ago. Did the legislature not acknowledge the truth of the agricultural distress, but would apply no remedy? The average price of wheat, which in a great measure regulates the price of every other agricultural produce, was, on the average of the whole year of 1835, only about 39s. per quarter, a lower price than ever known in England, even when the price of labour was only about one-half, and the

rise in price since has been entirely owing to unfavourable seasons, and not to any fault in the agriculturists. They, as a body, are no gainers by the present advanced price of grain, their crops being so greatly deficient. The merchants, seeing the nature of the season, held back their grain till the duty came to one shilling, and when they paid the duty wheat fell immediately more than 12s. per quarter, and it did not advance again till the great deficiency in the yield, and the damp state the grain was got in, prevented the farmers from thrashing, and the merchants held back their foreign grain. Surely then, this proves the beneficial effect of having an abundance of foreign grain held back till it was absolutely needed; which would not have been the case had foreign grain been admissible at all times, with a low duty, or no duty at all.

I am glad that the united merchants and manufacturers of the kingdom did meet at Manchester, and have openly declared that *they will have no duty whatever* as a protection to agricultural produce. The question at issue is really this,—are the manufacturers, merchants, and monied interest, to possess the whole landed property in the kingdom; after driving the agricultural labourers to distraction, if the farmers no longer employ them, to save themselves from utter ruin by contending with foreigners, whose land is worked by Russian boors, more degraded than the West India slaves ever were? It is hopeless to contend with those who have the interest of no national debt nor taxes to pay, and where the people are fed on worse food than is given to pigs in England, and which an English labourer would rather starve than eat.

The agricultural community has sustained a loss, to my certain knowledge, from my having been engaged largely in agriculture during the last twenty-five years, to an amount equal in value to the whole national debt at the conclusion of the late war, and have borne their loss with a patience unparalleled since the days of Job. Surely, then, the legislature will not subject them to fresh calamities. *If they do*, let the whole landed property be taken at once from its present possessors, and divided among the fundholders, manufacturers, and merchants, but let not the labourers suffer.

By the insertion of these remarks in your Magazine of next month, you will greatly oblige your obedient servant,

THOMAS BATES.

P.S.—It is hoped every parish or township in the kingdom will follow the laudable example set them by the Beverley Agricultural Society, and send up petitions to both Houses of Parliament, and urge the members who represent them in Parliament, to present and enforce the prayer of their petition, as the welfare of the whole community depends upon a proper stand being made to counteract the designs of their enemies. Keep your magazine, Mr. Editor, open to both parties, that all sides of the question may be thoroughly canvassed. I dare the Master Cutler of Sheffield and all his host—yea, the united talents of the whole word—if I do not prove, in answer to them, that protection is the only way to make cheap bread, and also to keep up the price of labour, thus benefiting the whole labouring community; then let all protection be withdrawn from agriculture, and let England cease to cultivate her soil any longer, and become dependent on foreigners for the supply of her daily food.

Kirkleavington, near Yarm, Yorkshire,
Feb. 2.

THE OBLIGATION AND EXTENT OF HUMANITY TO BRUTES,

PRINCIPALLY CONSIDERED IN REFERENCE TO DOMESTICATED ANIMALS,

BY W. YOUATT.

Author of "The Horse," "Cattle," and "Sheep." Editor of "The Veterinarian," and Veterinary Surgeon to the Zoological Society of London, late Lecturer on Veterinary Medicine at the University College, London; and Veterinary Surgeon to the Society for the Prevention of Cruelty.

Longman & Co.

There is scarcely a line of this work which will not enlist the better feelings of human nature on behalf of those creatures for whom the writer appeals with so much force and pathos. Placing implicit confidence in the justice of his cause, he says, "he will not appeal to the passions," but if there be a human being who can read his story unmoved, then say we, we have no hope of such a one. Although we should not hesitate to seek the attainment of the author's object, by an "appeal to the passions," we shall be content if it be in any degree promoted by the more common, but frequently more efficient mode of appealing to *interest*. We have selected for extract, a part of the work which we deem of considerable importance to our readers, and we especially entreat attention to the *loss* sustained by the mistaken treatment of the animals alluded to, putting altogether out of sight the unnecessary suffering to which they are subjected.

"The ill-treatment of cattle commences in some districts of the kingdom from the very birth of the animal. In several of the dairy districts it is thought advantageous to send the calf away, and to retain the milk of the cow for the manufacture of butter and cheese; and, therefore, carts laden with calves are continually travelling across the country from different parts of Essex and Suffolk to the metropolitan market chiefly, or to markets that are frequented by the suckling farmers. Their legs are tied together, and they are packed close to each other, and upon each other, like so many sacks of corn rather than living beings; their heads hanging down over the front and tail-boards of the carts. One of these vehicles will contain from eighteen to twenty-four of these miserable creatures, and which are sometimes kept four-and-twenty hours, or even two days, without food.

Their legs are tied, that they may not struggle in the cart. The Author was present when a person connected with this traffic, on being summoned to one of the police offices for supposed cruelty, produced a very soft kind of material which he said could not possibly hurt the animals; but the truth is, that the farmer is not very particular respecting the material which he uses for this purpose, and the injury done to the legs by the cords is very often so great, that the calves are completely crippled for awhile, and scarcely able to stand for several days in order to suck. The time for fattening is thus diminished, or in some cases altogether lost; for abscesses are not unfrequently formed, which eat deep into the flesh, and eventually destroy the animals.

They are carried with their heads hanging down, that they may have no *point d'appui*, no resting-place for the head and neck; they are consequently altogether prevented from struggling, however pain-

ful their position may be. It is a very ingenious although a horrible contrivance; for they are as helpless, and as still, as if they were altogether without life, except that the head will be turned a wee, wee bit, in order that they may gaze wistfully at the mother, who is sometimes following the cart, lowing mournfully, and miserable in a different way. In some parts of the country the legs are tied together, and the calves are carried on horseback for miles, with their heads hanging down, evidently suffering excessive pain, until the stupor, of which mention will immediately be made, succeeds.

The consequence of this pendent situation of the head must be that a great deal of blood will settle in or about the brain; and that there will be a horrible feeling of oppression and suffocation, which will gradually, and so far happily for them, degenerate into partial or almost complete unconsciousness, and thus many of them die. There is scarcely a market morning in which there are not six or eight dead calves thrown out of the carts; I saw seven dead calves lying together on the morning to which I refer. The living ones also are tumbled down with very little more economy than if they had no sense or feeling.

The Society for the Prevention of Cruelty has a model of a cart, in which these animals might be carried more safely, and without all this cruelty. It has been exhibited to some of these dealers in calves; but they find fault with one part of it or another, i. e., they are determined to pursue their own old-fashioned and abominable course until it is forbidden by law.

The thinking man would complain of the treatment of the calves, when arrived at the suckling farmer's establishment. They are fed only twice in the day, and then being allowed as much milk or porridge as they please, their stomachs are unduly distended, and indigestion and diarrhoea succeed, and many of them are carried off. This is one of the abuses of ignorance or idleness, and which ought to be remedied.

In due time, the remaining calves are fat enough for slaughter. Some of them are bought up by the country butchers, and the others are sent on to the metropolitan markets. But in what manner do they now travel? They are all standing in carts and waggons, and only fastened by a halter; *they are coming up to be made white veal, and they must not have a mark about them.* And why could they not have been carried down so? *It would have cost too much.* A sufficient quantity of them could not have been crammed into the cart. It is questionable, however, considering the number injured by the cord, and those that die from the pressure of blood on the brain, whether there would have been any great difference as to *the profit* on the whole concern, while there would have been a *very great saving of animal pain.*

These calves are brought up, to be converted into white veal. The muscles are all to be drained of blood, and not a blemish is to appear on the skin. The animal is taken carefully out of the cart. Let it be supposed that he arrives at the destined place on a Monday afternoon. He is scarcely got out of the cart before the jugular vein is opened, and the blood is permitted to flow until he falls. The morrow comes, and the bleeding is repeated, and again until he drops; and, oftener than otherwise, once more on the Wednesday. There are, perhaps, few of my readers who have not experienced—when largely bled—this seeming dying, and the worse sensation of returning life. Such, however, is the routine to which the poor calf is submitted during these three days. What thoughts and fears must occupy his

mind during this horrible time of starvation and suspense? for the animal is kept without food the last twenty-four hours at least. Whoever has passed by the slaughter-house in which these atrocities are committing, and heard the piteous and incessant bleatings of the animal, will never forget the tone of urgent supplication, yet utter debility.

On the Thursday or Friday he is brought out for slaughter, rolling and staggering from want of strength. A common sling, or hobble, is then placed round the hind legs, and he is drawn up into the air, with the hind legs upwards. Sometimes he gets a knock on the head with the poll-axe, but not sufficient to stun him; for the white veal must not be spoiled, and, above all things, the head must not be discoloured. A hook is now passed through his muzzle, to which a cord is attached that goes round the rope by which he was suspended, and by means of this the head is drawn backwards and upwards, until it is in a manner inverted, and no blood can deposit itself in any part of it. The fatal thrust is now, and not until now, given; the jugulars are cut through at one stroke, and the animal soon dies—the object being accomplished, that there shall not be a drop of blood in him, or a discoloured mark about him. Such are the abominations which are practised in the preparation of white veal; and they will continue until the perverted taste of the public no longer demands that the flesh of the calf shall be rendered pale and insipid, and comparatively devoid of nutriment.

I revert for a moment to the cow at the time of parturition. In some districts of Yorkshire, about two days before she is expected to calve, she is fastened by the horns to the back of a cart, and driven sixteen or twenty miles by way of preparing her for parturition. Occasionally the calf is produced by the way; or, many a time and oft, she has a most difficult and dangerous labour. This is one of the abuses of ignorance.

At times, a few days before she calves, she is nursed and fed in the most absurd way; and when the calf is produced, all kinds of nourishing drinks are made for her, and a state of fever, to a certain degree, is produced: then, all at once, the calf is sent away, and she is turned out, in good or in bad weather, and upon plentiful or scanty food, as it may chance to happen. The natural consequence too often results. She has rheumatism, or palsy, or puerperal fever, and, occasionally, she is lost.

There is another practice that deserves reprobation, and that is sending the cows to market for sale with their udders completely distended with milk. It is to give a false idea of their value as milkers. Every motion shews how much they suffer; and nature, by the discharge of a portion of the milk, seems striving to give them ease.

This folly has, in a great number of cases, seriously injured the animal. A portion of the milk has coagulated in the bag. It has caused inflammation where it lodged; garget has supervened, and, sometimes, serious illness."

AGRICULTURAL MUSEUMS. — EXPERIMENTAL FARM.—The Rev. J. G. Porter is about establishing an agricultural museum in Lisbellaw. Col. Crichton intends doing the same at Lisnaskea, in addition to which he intends apportioning a piece of ground on the Knockninny side of the lake, to answer the purposes of a model or experimental farm, on which a school-house will be erected, for the purpose of having boys and young men practically instructed by qualified persons, in the improved systems of cultivation, drainage, as well as the manures best suited to the various soils of this county.—*Fermanagh Reporter.*

DESCRIPTION OF A MACHINE FOR DISTRIBUTING SOOT, AND REMARKS ON SOOT AS A TOP-DRESSING TO CROPS.

BY MR. ALEXANDER MAIN, FACTOR TO THE EARL OF DALHOUSIE.

(From the Quarterly Journal of Agriculture.)

The importance of soot as a manure is becoming more and more apparent as farmers proceed in their experiments on the great scale with its ap-

plication to various crops. The favourable results of soot-manure are producing an extension of its use; an increase in the price of the article will follow the demand for it; and the natural consequence of these results will be a desire to apply it with all possible economy. Mr. Main, who has been for several years using the manure to a considerable extent, and with great success, has also turned his attention to the means of economizing its application, and after repeated trials, has succeeded in the construction of a machine which, in a great measure, has realized his expectations, and of which a model has been submitted to the Society.

Fig. 1.

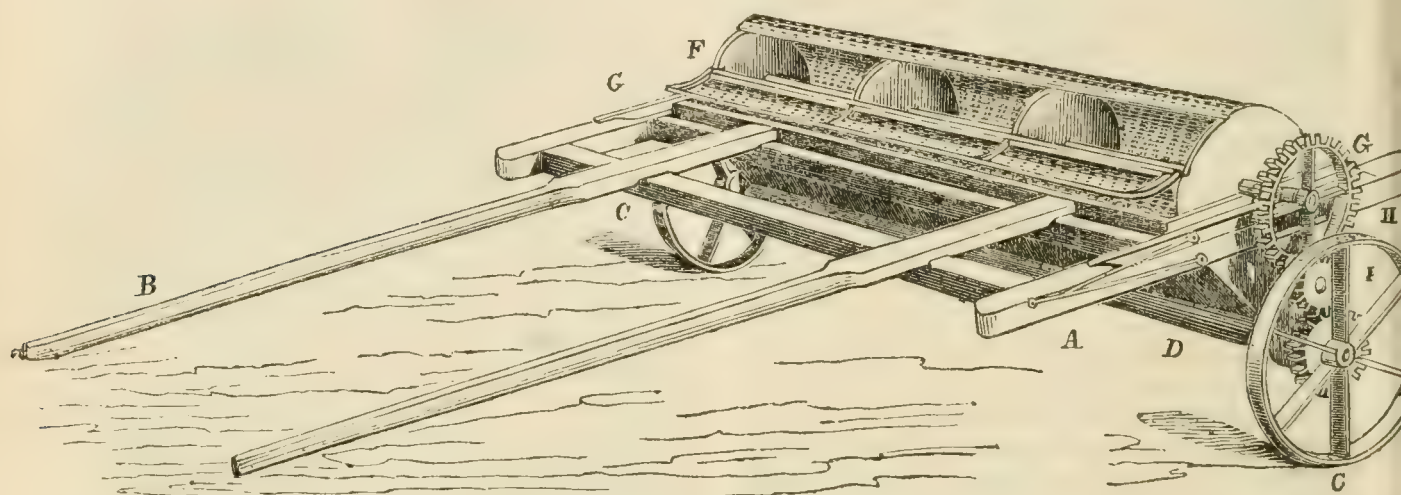
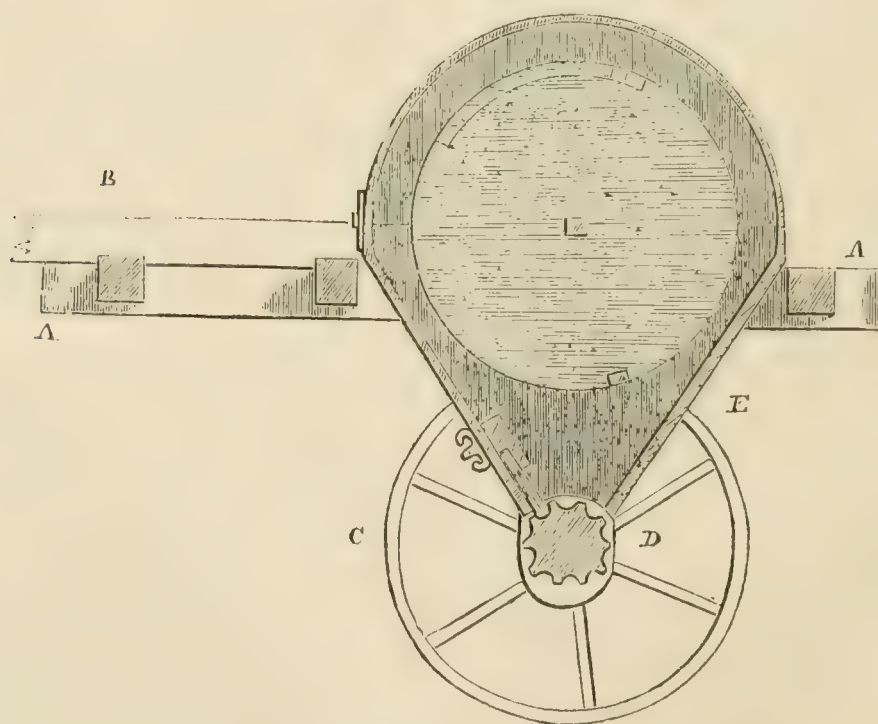


Fig. 2.



The soot-distributor is represented in perspective in the cut, Fig. 1, while Fig. 2 is a transverse section, shewing more distinctly the relation of those parts that are but partially seen in Fig. 1. The section is taken on a plane passing through the middle of the machine, and at right angles to the two cylinders afterwards described, the horse shafts being represented as broken off. The letters of reference apply to corresponding parts in

both figures. The machine consists of a bed frame or body, A, to which are attached a pair of horse-shafts, B, and is mounted on a pair of low wheels, C, twenty-two inches in diameter, and four inches broad in the sole. These wheels are fixed upon, and turn with their axle, around which there is built a wooden cylinder, D, about eight inches in diameter, and six feet in length, fluted longitudinally. A chest, E, six feet in length, is appended

to the body, and descends so as to half embrace the cylinder, D, and is surmounted by a semi-cylindrical lid, hinged on one side to the edge of the chest. (The lid is left out in Fig. 1, but is seen in section in Fig. 2.) In the interior of the chest there is placed a cylinder of sheet-iron, F, about twenty-two inches in diameter, perforated all over, giving it the character of a riddle, the perforations being about one-half inch in diameter and as much apart. This cylinder is closed at both ends, and is divided into three compartments by divisions of thin deal, besides being furnished with a trap door, opening longitudinally on hinges, as seen in Fig. 1, which can be secured by hook-and-eye fixtures. An axis of iron passes quite through the cylinder, having journals which rest in bearings in two jointed bars, GG; and on one end of the axis, produced beyond the bar G, is mounted a wheel, H, of eighteen inches diameter. The axis of the carriage wheels bears a toothed-wheel of nine inches diameter, which acts upon the wheel H through the intermediate wheel I. The progressive motion of the machine, therefore, gives motion simultaneously to the two cylinders. The use of the fluted cylinder is for distributing the soot upon the ground, while that of the perforated one serves to separate stones, mortar, &c., that frequently are found mixed with the soot, and ready to retard and injure the effect of the fluted roller, while the curved lid of the chest prevents the soot flying off by the agitation of the cylinder.

The operations of the machine are effected in the following manner. The lid of the chest being thrown back, the door of the upper cylinder is opened, and a charge of soot introduced. The machine is then put in motion. The revolutions of the upper cylinder causes the soot to fall through it upon the fluted cylinder, which, in its revolutions, discharges in succession, the soot contained in the grooves or flutings. In order to regulate with more precision the quantity of soot discharged by the fluted cylinder, and to assist in keeping the cylinder clean, a brush equal in length to the cylinder, is applied to and presses against the grooves, with more or less force, according to the quantity required to be discharged. When the soot has been discharged from the upper cylinder, the latter is lifted out of the chest by means of the jointed bars, GG, and while in this elevated position, it is supported by the elbow-joint rods, seen on the side of the bed-frame, Fig. 1; the trap door being now opened, the cylinder is turned round till the opening comes downward, when the stones and mortar which have been separated from the soot are discharged; the cylinder is then returned to the chest, a fresh supply of soot is introduced, the cylinder is closed, the lid of the chest brought down, and the work proceeds as before.

Though Mr. Main has found this machine to fulfil the chief conditions of the distribution of soot, he is aware that it is imperfect in one respect—that of discharging with tolerable precision, the smallest possible quantity per acre that may be held beneficial. The fluted cylinder and brush can hardly accomplish this. It has therefore been suggested to combine an arrangement on the principle of the broadcast sowing-machine, along with the perforated cylinder; and there appears no reason to doubt that such a combination, properly arranged, would effect the object. Indeed, a machine could be constructed on this principle that would not only answer the purpose of distributing soot, but rape-dust to any quantity per acre;

and it might also serve as a broadcast machine for sowing grain.

Mr. Main's experience of the effects of soot as a manure is thus given in his own words:—

"Previously to using soot, I was in the practice of applying saltpetre refuse, but this was an expensive stimulant, and, on recommendation, I made a trial of soot. I have now used it for three years, and every year has strengthened my conviction of its utility as a manure. In 1838, to make a fair trial, I manured eighteen ridges of grass, alternately, with soot and saltpetre, the saltpetre being applied at the rate of two cwt., and the soot forty bushels per Scots acre. The result was, that the ridges dressed with soot were more luxuriant than those with saltpetre. This experiment satisfied me as to its effects; and when to this was added the difference in price, the saltpetre at 10s. per cwt., costing 20s., the soot at 2d. per bushel, making it only 6s. 8d. per acre, it recommended itself at once as the more useful and profitable application. I have tried the same experiment on wheat, and with the same effect. I may add, that I have compared the effect of soot with that of other stimulants, and the result has been equally satisfactory in its favour. In 1838, I applied soot to a field of wheat which, at the time, seemed in so very precarious a state, as to make me even despair of its recovery. After applying the soot, however, it rallied; and, when cut down, there was not a better crop on the farm. I cannot ascribe this result to any other cause than the effects of the soot; and in this case it was only applied at the rate of twenty bushels per acre. Soot does not seem to injure grass in the estimation of sheep; and, in proof of this, I tried its effects on a small piece of pasture, upon which a few sheep were afterwards put to graze. The result was curious. There were many other ridges in the field besides those dressed with soot, and all good grass, but the sheep continued to eat the sooted ridges until they were completely bared. With faces quite blackened, they fed heartily on the soot-dressed pasture.

"As to the precise quantity of soot necessary for a dressing, I cannot speak positively. I have found forty bushels to have a great effect, and, in one case mentioned, twenty bushels have succeeded. However, some of my neighbours do not scruple to apply sixty and even eighty bushels per acre. But I intend, this year, 1839, to make some experiments on quantity, and the result I shall communicate with much pleasure.

"From the short time that soot has been used in this quarter, its effects on quality have not yet been correctly ascertained, and some farmers object to its use on this account; my experience leads me to look upon this objection as groundless, for, as regards hay, that grown with soot is eaten with as much avidity as any other hay; and as for wheat, though the grain of soot-dressed wheat is certainly larger than the grain grown upon land without soot, still it remains to be proved that it is thereby injured or deteriorated in its meal qualities. Perhaps, however, the time of applying the soot may have an effect on the quality. It is my opinion that the soot should be applied when the grass and wheat are young, or about the end of April, or the first week of May, and not later. If applied later, the plants are then high, and do not admit of the soot falling freely to the ground. By an early application this evil is avoided. I may add, in conclusion, that I have always found damp weather the best in which to apply the soot, though, when the soot is used, it should be quite dry, otherwise the machine will not distribute it with regularity."

ON BREEDING IN-AND-IN.

[It is well known amongst the breeders of stock, that there is no question more warmly disputed than the effect of constantly breeding from the same stock, and the necessity of occasionally infusing new blood. We believe we shall be fully borne out in stating that the *majority* of breeders are in favour of introducing new blood. If the sub-joined statement be correct as to facts, and from our knowledge of Mr. Barford we are ready to vouch that it is, this can no longer be considered a "*vexatâ questio*." We shall be much obliged to any of our readers who may feel disposed to favour us with their opinions upon the subject.—Ed. F.M.]

FOSCOTE SHEEP.

The following is a pedigree of the flock of sheep, bred by me at Foscote, near Towcester, Northamptonshire; descended from sheep of the first repute, from the Dishley flock of Bakewell and Honeyborne, from the year 1783 to 1803 inclusive; through the flock of the late Mr. Joseph Robinson, of Wellingborough Lodge, Northamptonshire; who was a member of the Dishley Society from its commencement in 1783 to 1803 inclusive.

VALENTINE BARFORD.

May, 1837.

Sheep used in

- 1789 A two-shear by a Dishley sheep, used by Mr. Robinson in 1786.
- 1790 A two-shear by a Dishley sheep, used by Mr. Robinson in 1787.—ironically called Lumber.
- 1791 The same sheep as last year.
- 1792 Mr. Robinson, A. F., by the Dishley A.
- 1793 Another son of the Dishley A.
- 1794 Long Tail, by a Dishley sheep, name unknown to me.
- 1795 A son of A. F.
- 1796 A son of Long Tail, dam by A. F.—(a sheep of my own.)
- 1797 A son of the Dishley Q. K., and S. a grandson of a Dishley sheep.
- 1798 Another son of Q. K.
- 1799 A sheep of my own.
- 1800 A shearling, grandson of a Dishley sheep, name unknown to me.
- 1801 G. of 1797, by Dishley Q. K.
- 1802 A shearling, by a grandson of the Dishley I., dam by Q. K.
- 1803 The same as last year.
- 1804 A son of Dishley, six of 1802.
- 1805 Twin G. N. (by G. N. of 1797, a son of Q. K.)
- 1806 Little G., a great grandson of G. of 1797, used by me 1801.
- 1807 Little G., as above, and Flaxdresser, sire of Little G., and grandson of G. of 1797.—Flaxdresser, by G. H., a son of G.
- 1808 Cambril, a son of No. 11, of 1804.—No. 11 by Dishley C., alias Cade, alias Cuddy, of 1802.
- 1809 Cambril.
- 1810 No. 4 of 1810, by a grandson of C., alias Cade, alias Cuddy, of 1802, and Lumber a sheep of my own, by Cambril.

All the above-named sheep were hired of Mr. Robinson, except those used in 1796, and 1799, which were my own, descended from the above-named.

The following are bred entirely from my own flock, sire and dam, without an interchange of male or female from any other flock.

Sheep used in	Sire.	Dam by
1811 Blue Cap.....	Cambril	Little G.
No. 10, of 1810.	Cambril	Little G.
1812 G. C.....	Cambril	Little G.
Crooktail	No. 4, of 1810	Cambril
Cade	No. 4, of 1810	G. N. of 1805
1813 G. C.		
No. 10, of 1810.	Cambril	Little G.
Rumps	Blue Cap...	Cambril
1814 G. C.		
Crooktail		
G.....	G. C.....	Flaxdresser
1815 G. C.		
Crooktail		
G.		
1816 G. C.		
Cade		
G.		
Crooktail		
Br. to Blackfoot,		
of 1814.....	Cade	Cambril
1817 Crooktail		
Cade		
G.		
Br. to Blackfoot,		
of 1814		
G. N.	G. C.....	G. N. of 1805
1818 Crooktail		
Blackfoot.....	By brother to	
	Blackfoot	
	of 1814....	Cambril
Symmetry	G. C.....	Crooktail
1819 Crooktail		
Symmetry		
Blackfoot as		
above		
Woodstoke	G. N. of 1817	Crooktail
1820 Cade	Cade	Crooktail
Symmetry		
Woodstoke		
Blue Cap.....	Crooktail...	G. C.
1821 G. P., alias Gra-		
vel Pit.	Crooktail...	Lumber
Blue Cap		
Blackfoot as		
above		
And Blackfoot .	Crooktail...	G. C.
1822 In-and-In	Crooktail...	Crooktail
Blue Cap		
G. P.		
Blackfoot.....	Crooktail...	G. C.
1823 Blackfoot.....	Do.....	Do.
Woodstoke		
G. P.		
Chine.....	Blackfoot, by	
	Crooktail .	Crooktail
1824 No. 9, of 1821 .	Blackfoot, by	} Crooktail Dam of Chine
	b. to Black-	
	foot of 1814	
Woodstoke		
Wellington	Woodstoke .	G.
Blackfoot	Crooktail ...	G. C.
1825 Blackfoot	Crooktail ...	G. C.
Chine		
Wellington		
Rumps	Cade of 1820	
	by Cade..	Crooktail
G. N.....	Woodstoke .	G. P.

Sheep used in	Sire.	Dam by
1826 Chine		
White Nose ...	Blackfoot, by	G., dam of
	Crooktail.	Wellington
Posthumous ...	Cade of 1820	
	by Cade..	Crooktail
No. 9, of 1821		
Romulus	No.9, of 1821	G. P.
1827 Chine		
White Nose		
Romulus		
1828 Romulus		
Little G.....	Wellington .	G. P.
Posthumous		
Chine		
1829 Romulus		
No. 3, of 1826,		
alias Deceit..	No.9, of 1821	Old Rumps
G. N.....	Woodstoke .	G. P.
Little G.		
1830 Deceit		
Little G.		
G. N.		
1831 Cantab.....	Little G....	G. P.
Little G.		
Cadland.....	Little G....	No. 9, of 1821
Cambril	Little G....	Blackfoot, by
		Crooktail
1832 G. N.....	Romulus ...	Blackfoot, by
		Crooktail, d.
		of Cambril
Cadland		
Union	Little G....	Romulus
Cantab		
1833 G. N.....	Romulus ...	Blackfoot, by
		Crooktail, d.
		of Cambril
Union		
Cantab		
Drayman.....	Cantab.....	G. P.
1834 G. N.....	Romulus ...	Blackfoot, by
		Crooktail, d.
		of Cambril
No. 27	Little G....	Posthumous
G.....	Little G....	G. P.
No. 163.....	G. N.	Little G.
1835 Grendon	Union	Romulus
Drayman	Little G....	G. P.
No. 163.....	G. N.....	Little G.
Black Lip	Union	Whitenose
1836 Black Lip	Union	Whitenose
No. 163.....	G. N.....	Little G.
No. 238.....	G. N.....	Hobler
No. 330.....	G. N.....	Little G.

N.B.—This flock which are bred from the nearest affinities, which is considered breeding *In-and-In*, have not experienced any of those defects ascribed to the practice. The males and females have been selected and paired on the principle upon which improvement depends; have been kept entirely in a state of nature, fed upon vegetable food only, and are at all times in the year open for inspection.

WOOLLEN MANUFACTURE IN SIBERIA.

—In the middle of one of these newly arisen birch-woods is situated the manufacturing town of Telma, consisting of two rows of log houses, erected on the sides of a log road covered with smooth planks. A handsome stone church, in the Italian style, and spacious barracks, give the place an air of importance. But the workhouse of Telma is the wonder of Siberia.

It is with constantly increasing admiration (says M. Ermann) that one approaches the workhouse, a fabric of two stories, and which is, no doubt, the largest and finest specimen of architecture in North Asia. The front of it has a length of 364 feet, and is adorned with massive columns, between which, in two rows, are the windows, of the purest plate glass. The lower story is divided into three apartments, in which are carried on the manufacture of cloth. Above, dwell the officers who manage the institution, on the account of the Crown. Stone warehouses, and mills of different kinds, are situated along the banks of the stream which drives the machinery of the workhouse. The advantages of the locality were discovered a century ago, by private speculators, since which time Telma has been famous for its cloth manufactory. More recently, glass, paper, and linen, have been added to its productions. The inhabitants of Telma are about 2,000 in number, of whom 800 find employment in the manufactories. They are persons exiled for crimes, but whose manners, nevertheless, are irreproachable in their new and more fortunate situation, in which they are neither pressed by want, nor goaded by despair. They are supplied gratuitously with meal, and receive besides an amount of wages proportioned in each instance to the value of the labour. The wool required for the manufactory at Telma is procured chiefly from the Buraets and Tunguses, who wander with their flocks over the southern borders of Siberia. The machinery for combing and spinning the wool was originally procured from England, and was afterwards made in Siberia, according to the English model, at one-fifth of the cost of the latter. Telma produces annually about 50,000 yards of woollen cloth, and half that quantity of linen. The former is sold at a price not exceeding half-a-crown a yard. Among the causes operating to depreciate it, one of the most influential is fashion. So decided a preference is given to European cloth, that nothing short of a very great saving in the price can reconcile the Siberian to the manufacture of his own country. Pains are taken, notwithstanding this discouragement, to improve the wool, and in 1830 a flock of 480 Spanish sheep were driven from Moscow to Irkutsk; and notwithstanding the length of the journey, and the plagues of the Barabinskian steppes, 300 of them reached their destination in safety.—*Travels in Siberia by a German.*

CAPTAIN BARCLAY OF URY.—It will be recollected that, in September last, this spirited agriculturist sold off, without reserve, the whole of his justly-celebrated short-horn stock, consisting of about eighty different lots; and stated at the time, that his object was not to give up the breeding of short-horns, but on the contrary, by procuring some animals of the best blood, without regard to expense, to lay in an entirely new stock, so as to produce, if possible, a still superior animal. We now learn that he has obtained from Mr. Wetherell, auctioneer, Durham, in whose hands he had placed an unlimited commission for the purpose, twenty-two heifers of the Durham breed, which cannot be surpassed in England or Scotland. He has also repurchased from Sir Francis M'Kenzie of Gairloch, for One Hundred Guineas, the celebrated short-horn bull, Mohammed, by Monarch, dam, Lady Sarah, which Sir Francis had bought at Captain Barclay's sale, in 1836, being then a calf, for 70*l*.

HEDGE-CUTTING.—The annual competition for the prizes offered by the Banbury Agricultural Association to the best cutters of fences against sheep and oxen, took place on Tuesday last in a field belonging to Mr. Gulliver, of Bloxham. There were seven competitors for the prizes offered for sheep fences, and five for the ox fences. The following were the successful candi-

dates for the sheep fences; to the hedge-cutter, recommended by a member of the association, and usually employed by him for such purpose, who shall cut 12 yards as a fence against sheep, and scour the ditch in the best manner, within the space of six hours: 1st prize, 2*l.* to Thomas Cox, employed by Mr. J. Middleton, of Upton; 2nd prize, 1*l.* 10*s.* to H. Pettipher, employed by Mr. R. Greaves, of Fritwell; 3rd prize, 1*l.* to Wm. Hartwell, employed by Mr. Horwood, of Steane. To the hedge-cutter cutting 12 yards, as a fence against oxen, within eight hours (under the same regulation as for sheep fences).—First prize, 2*l.* to Wm. Gunn, employed by Mr. J. Greaves, of North Newington; second, 1*l.* 10*s.* to John Miller, employed by Mr. Thomas Wilson, Brackley; third, 1*l.* to John Wilkes, employed by Mr. W. E. Boyes, Alkerton.

DON JOHN ;

(THE PROPERTY OF THE EARL OF CHESTERFIELD.)

WINNER OF THE DONCASTER
ST. LEGER, 1838.

Don John, whose portrait embellishes our present number, varies from the generality of racers in the length from the hock to the ground, which in him is greater than usual, a formation regarded as inimical to speed; but inconsiderately so, beyond all question. The fleetest, the most powerful, and far the best racer the world ever saw, was long from the hock to the ground—we allude to Eclipse, whose rate of going was never accurately ascertained: however, he could not only beat, but distance with the greatest ease, all his competitors; yet he was never touched with either whip or spur, but held in hand in all his races. Further, if we leave example out of the question, and resort to comparison for an elucidation of the subject, we shall find much in favour of the form in question; the more forward a horse can bring his hind feet every stride, the greater or more swift must be his progressive motion, and the point at issue is, whether a long or a short hind leg is best calculated for the purpose. The hare is the fleetest quadruped in creation, by comparison; she is long from the hock to the ground, and brings her hind feet more forward every stride than any other four-legged animal: if, therefore, we perceive this formation presented by this extraordinary little creature, it cannot fail to assist her stride, and why not assist that of the horse also?

The quarters of Don John are widely spread, and very powerful, with sufficient laxity of loin to give freedom in the action of the gallop; round carcase, brisket deep, and low dropping, shoulders well formed, neck light, head handsome, and manifesting in an unusual degree the characteristics of the Eastern original, arm long and powerful, pastern longer than usual, but wiry. Hence Don John must necessarily possess superior speed, and superior powers of endurance—abundantly testified by his performances. His colour, a good bay, stands fifteen hands three inches.

Nature acts by laws equally wise and equally wonderful, and hence we find the organization of the incalculable varieties of creation adapted to their wants and their habits of life; if therefore we look at the horse in a state of unlimited freedom, existing in the plains where he can find pasturage, and offering no violence to any other animal, swiftness has been given him for the purpose of outstripping his enemies, and particularly to enable him to avoid the attack of ferocious animals, while leaping to any great height or distance was not necessary; the progressive motion of the horse is more fleet than that of any other animal; but leaping is not his forte; he is rarely able to leap his own height; while feline

animals can bound many times their own height, as exemplified in the domestic cat; such creatures, be it recollected, seize their prey by springing upon it, and therefore nature has kindly endowed them with the power for that purpose: however, if they thus excel the horse in leaping, they are far inferior to him in progressive speed, clearly indicated in their conformation, while the shape of their hinder parts shows whence they derive their surprising spring; their quarters are very widely spread, much elongated, tapering to the hock, whence to the ground they are short; they are thus enabled to draw their hinder parts under their body, and spring to a very great distance or to a very great height. It would therefore appear, that short hind legs (from the hock to the ground) are better calculated for leaping, than conducive to progressive speed, all feline animals being thus formed, all of them remarkable for the extent of the bound or spring, while their progressive speed is of a very inferior description; their gallop, unlike that of the horse, consists of a succession of bounds, distressing to the animal, and by which it very soon becomes fatigued.

If we recur to the greyhound, we shall perceive that he is short from the hock to the ground, as we have already noticed; he is fleet, but his leaping is more extraordinary than his speed; he can bound to a very considerable distance, and leap several times his own height. The hare, on the contrary, whose formation of the part in question is the reverse of that of the greyhound, is immeasurably fleetest than the latter, (being not more than a sixth of his weight) but makes a poor figure in leaping. May it not, therefore, be reasonably concluded that short hind legs are intended to assist the impetus in leaping, rather than accelerate progressive motion? If these conjectures be correct, and the preceding analogous observations point strongly to their accuracy, it consequently results that the length of Don John's hind legs must be considered rather as a perfection, than as detrimental to speed.

PEDIGREE OF DON JOHN.

Don John was bred by Mr. Garforth, and was sold when a foal to Mr. Ridsdale, for 100 guineas. At the sale of that gentleman's stud he passed into Lord Chesterfield's hands (being then a yearling, we believe,) for 140 guineas. He is by Tramp or Waverly, out of a Comus mare, (bred in 1820 or 1821 by Mr. Garforth,) her dam Marciana, by Stamford, out of Marcia, by Coriander—Faith by Pacolot—Atalanta by Matchem—Lass of the Mill by Oronooko—Sister to Clarke's Lass of the Mill, by Traveller—Miss Makeless, &c.

PERFORMANCES OF DON JOHN.

1837. Won the two year old Stakes at York Spring Meeting easily, beating Alzira, f. by Jerry, out of Purity, Wee Willie, Ares, and Vertumnus.

Won the Champagne Stakes at Doncaster in a canter, beating Barbarina, The Fairy Queen, Miss Fanny colt, Apollonia filly, and Charley Boy.

Won the Claret Stakes at Heaton Park, beating The Fairy Queen with the greatest ease.

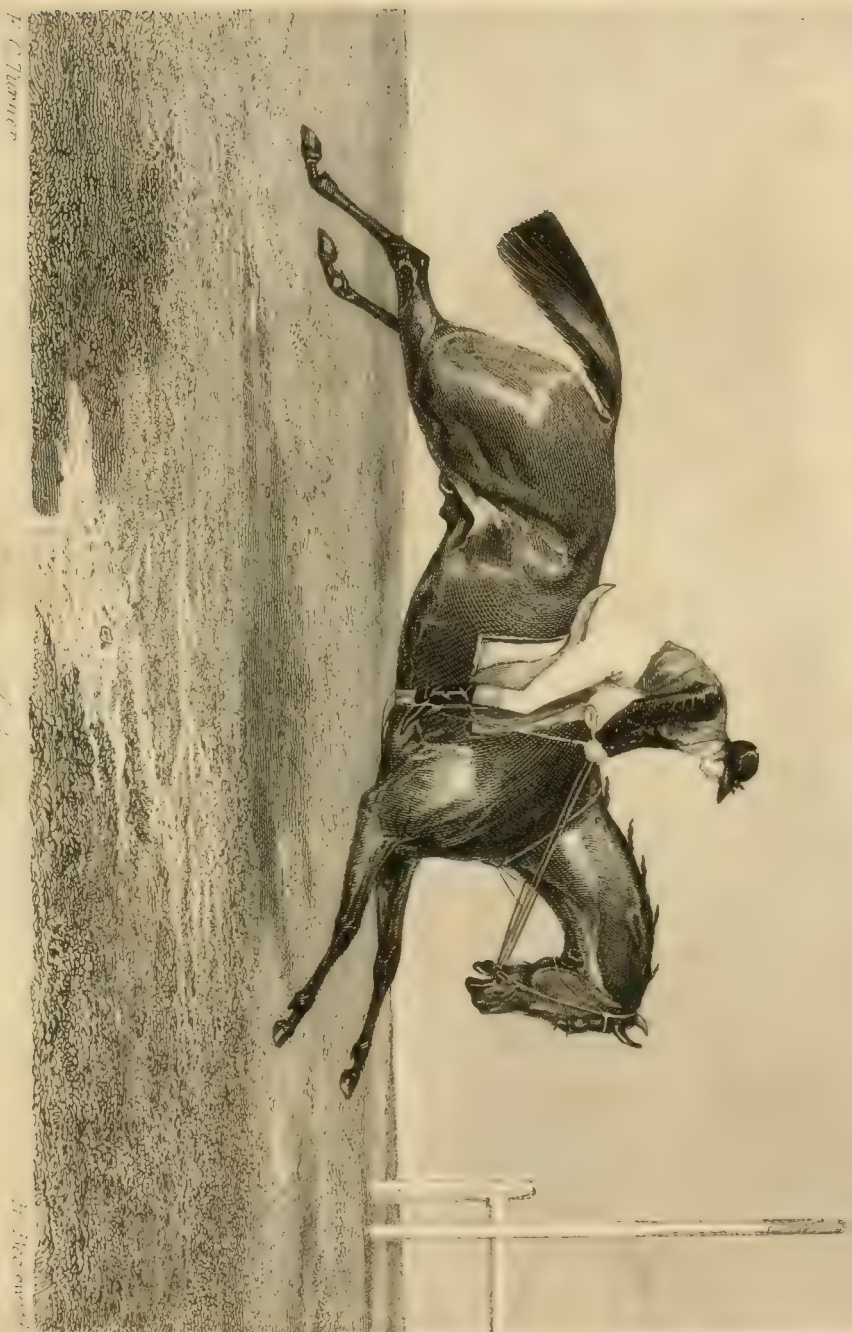
1838. Walked over for a Sweepstakes of 200 sovs. each, in the Newmarket Craven Meeting.

Won the Great St. Leger on Tuesday, September 18, going at his rate, beating Ion, and five others.

On Thursday, Sept. 20, he carried off the Gascoigne Stakes without a struggle, no competitor coming out to dispute the prize.

The same day he won the Doncaster Cup in his usual style, beating Bee's Wing, The Doctor, and Melbourne.

On Wednesday in the following week, Don John walked over for the Heaton Park St. Leger.



H. C. Turner

H. C. Turner

W. C. Turner, St. James's Palace, 1838

London: Published by W. C. Turner, St. James's Palace, 1838

SYSTEM OF MANAGEMENT ON THE FARM OF SWAYTHORPE,

THE PROPERTY OF LORD HOTHAM.

SIR,—I have observed in some of the late numbers of your publication, several letters on the propriety and practicability of establishing experimental farms, in conjunction with schools for common and useful education, where the youth of this country, (especially those destined for agricultural pursuits,) might have the advantage of receiving not only that instruction which would enable them to take their station in society, as men of respectability and intelligence, but of becoming practically conversant with all the varied minuti of that occupation by which they are to subsist.

Establishments of this description, if put on a good working plan, would undoubtedly be useful in more ways than one: and it is not at all improbable that such institutions may be commenced either as private, or as joint-stock speculations, when it is to be hoped they may be attended with success, and conduce to the public benefit, beyond the most sanguine expectations of the proprietors. But as it must be a work of time, before any scheme of this kind can be brought to maturity, I would suggest with a view to the same end, namely, the dissemination of information, and the general improvement of the system of agriculture, the propriety of admitting to the columns of the "Farmer's Magazine," a detailed report of the particular modes of management practised on farms, selected in different parts of the United Kingdom, which may be conspicuous for good management in their districts.

An article of this description in each number, would probably be interesting to most of your readers, and to some perhaps instructive; for however good a manager a person may be on the whole, he will certainly not be the best in every point; and both good and bad farmers might occasionally derive hints from reports of this description, which might be turned to good account.

As an attempted specimen of what I mean, I beg to hand you a short account of the farm Swaythorpe, which obtained the first premium value 20*l*. at the meeting of the Yorkshire Agricultural Association, at York, in July last, against five competitors, as being the best managed farm in the county, which will be a sufficient guarantee for its being entitled to a distinguished place in the scale of well managed farms in England.

Swaythorpe,—the property of Lord Hotham, and in the occupation of James Hall, Esq., is situate in the parish of Kilham, on the most elevated part of the Yorkshire wolds, about 10 miles N.E. of Driffield, and eight miles W. of Burlington. It contains 774 acres in a ring fence, of which 170 acres are in grass, and the remainder in tillage.

The soil,—not naturally very fertile, is what would perhaps be provincially understood, by a strong, heavy wold, free from any admixture of flint, or gravel, and resting at the depth of several feet on a chalk rock.

About fifty or sixty years ago, Swaythorpe was chiefly what is termed a sheep-walk, studded over with patches of whins, and ling, the injurious effects of which may be occasionally seen to this day, in the partial grubbing of the crops, where these patches have formerly been.

Soon after the time mentioned, it began to be progressively brought into cultivation, by ploughing out certain portions every year, which after

producing two or three crops, chiefly of oats, were laid down again, and so continued in bad grass, or ley, for the purpose of freshening, or of restoring its exhausted fertility.

After lying in this state a few years, each portion was in fixed rotation, again taken out and cropped as before.

This land was then thought to be incapable of growing wheat, and almost all attempts to cultivate that grain were unsuccessful. But it will require no argument to convince those who have witnessed the crops at Swaythorpe of late years, that the soil there will grow wheat as well as other grain. The more liberal application of capital of late years, together with the march of agricultural improvement, have wrought a miraculous change in the appearance and produce of this farm.

The management of Swaythorpe is entirely under the direction of Mr. Hall, who is fortunate in having in Mr. John Fields, the resident bailiff, a person who can so ably superintend the multifarious and diversified operations necessary on a farm of this magnitude.

It is divided by quickwood fences, into fields of from 40 to 70 acres each. The tillage is managed in a four crop course of husbandry, that is to say;

1. Fallow, with turnips.
2. Barley, and oats, in alternate rounds.
3. Seeds, eaten with sheep.
4. Wheat.

A naked or summer fallow is not required here, nor is it ever practised. The family of quicks, docks, thistles, charlock, &c., so troublesome to farmers generally, are so nearly extirpated from this farm, as to render the operation of fallowing comparatively an easy task.

Besides this, a green crop on wold land, has been proved by long experience, to have a beneficial, rather than an injurious effect.

It is considered essential that the requisite ploughings, harrowings, and even the sowings, should be performed as much in dry weather as possible.

The small harrows are perhaps less used here than on most other farms; it seems to be better that the land should be lightly laid up by good ploughing, and cross draining, so as to be most exposed to the mollifying influence of the sun and air, than that it should be levelled and trodden down by the horses, and small harrows, particularly when the land is clear.

The sowing of turnips is performed principally in the month of June. The quantity of seed, is of Swedish 2½*lb*. and of white 3*lb* to the acre. Very early sowing is not practised here, it being considered better that the plants should grow away from the first, although later, than that their growth should be checked by drought, mildew, &c., to which they are more liable when sown very early. They would too, if sown very early, and not interrupted in their growth, in consequence of the large size which they usually attain on this farm, have a tendency to become light and spungy, and thereby much deteriorated in value, as an article of food for sheep and cattle.

The turnips are drilled, always on ridges, about 27 inches apart. 25 bushels of half inch bones and dust is the minimum quantity used per acre for Swedish, and 20 bushels for white turnips.

The drill here used, is 4½ feet wide, sows two rows, and is similar to those in common use, except that the seed is conveyed by a set of funnels or spouts, separate and a few inches behind those

which convey the bones. The bones are first deposited at the bottom of the seam made by the coulter. As the machine progresses, a light covering of soil falls over the bones, and on this soil, there being still a seam, the seed is dropped by the second row of spouts. This method of sowing the turnips, is here esteemed a great improvement on the common practice of running the bones and seed down the same spouts, where the seeds from their small and globular form, must necessarily fall to the bottom of the seam, and the roots consequently strike downwards, and from the bones; but when the seeds are dropped on the finely pulverized soil by which the bones are covered, they have the benefit not only of the moisture which may be in that soil, to start germination, but immediately on the roots presenting themselves downwards in search of food and support, they come in direct contact with the bones which are placed there for the purpose of giving them that support.

Another advantage is, in having the seed deposited so near the surface, when the least effort is required in the young plant to emerge, and the more quickly it receives the simultaneous assistance of the atmosphere to the leaves, and of the manure to the roots. At all events, it may almost be said, that in tolerably favourable seasons, the young turnip plants are so vigorous, and their growth so rapid, resulting from the fine tilth of the soil, the method of sowing, and the liberal application of manures, as to bid defiance to the attack of the turnip fly.

When the turnips have attained their proper growth, they are skimmed, or scuffled, and then very carefully hoed, and singled out, about 12 inches apart. The hoeing is never done by contract, but always by the day labourers.

The advantage of this, is in having the work better, and even more cheaply performed. The day labourer does not require the vigilant and watchful eye of the superintendent to be constantly prying over his work. He has not the prospect of an extra 6d. per day, to induce him to scramble over a greater quantity of ground than he can do well.

There is therefore no total destruction of plants for several feet together. There is no frequent occurrence of double plants as is generally to be found in work done by the acre. The day work plan may seem more tedious and expensive, but it stands for a doing, and is ultimately the cheaper; whereas the contract work has to be gone over a second time, and is never left as it ought to be. The old maxim holds good in turnip hoeing, as well as other matters, "a thing once well done, is twice done. A thing only half done, is not done at all."

The turnips, as said before, usually attain a large size at Swaythorpe, and in the autumn, from the fullness of the crop—the perfection of the hoeing—the accurate straightness of the drills—the vigorous and healthy appearance of plants, are to the eye of the practical farmer, a very pleasing sight. They are always eaten on the land by sheep, except about one-tenth, which are drawn off (three rows in every thirty), and carted to the fold-yard for the cattle.

The sowing of rape is not adopted as part of the system pursued at Swaythorpe. The surpassing value of this plant for the purpose of feeding sheep, must be admitted by all, but it is not equally clear, that it is even on deep soiled wold land, ultimately very beneficial.

When the turnips are eaten off, and indeed as fast as the ground is progressively cleared, it is ploughed *once* for the succeeding crop of barley or oats; it being usual to sow half the turnip stubble with each, and reverse them on the succeeding round.

The advantage of early ploughing for spring sowing, both of grain and seeds, is very evident, not only in the more easy working of the land, but also in the crops themselves.

The barley and oats are almost invariably drilled, and in rows at intervals of 7 inches. Four bushels of barley, and seven of Oats, is about the average quantity of seed to the acre. The clover seeds are sown immediately after the corn. They are a mixture of 18lbs. of white clover, 4lbs. of red clover, 3lbs. rib grass, 8lbs. trefoil, 2lbs. parsley; the proportionate quantities occasionally varied according to circumstances. They are sown broadcast.

An improvement in the manner of sowing seeds is about to be commenced, by adopting the hand, or barrow seed drill, which is easily worked by two men, without horses, who can drill from 20 to 25 acres per day. The machine is 12 feet long, and can be regulated so as to distribute any required quantity of seed to the acre, with the greatest accuracy, however uneven the ground, and without missing or overlapping any part of it. After the seeds are sown, they receive one light harrowing only.

It need not be said that furrows, or water courses, are unnecessary on wold land.

Neither rape dust, nor any other manure is used for a spring crop; the land being in condition to bring as great an abundance of straw as can be desired; sometimes perhaps too much, as it is apt to get down and smother a great part of the seeds beneath.

The seeds are only suffered to lie one year, when they are ploughed up, and invariably sown with wheat. It is thought better to have the land ploughed a week or two before sowing, to receive the tempering influence of the weather. The plan of manuring the young seeds in the autumn, or early in the spring, has been tried here, and found to have its advantages, as well as disadvantages. The herbage has come nearly a fortnight earlier, the pasture has carried more stock, and the wheat crop has been equally good. But the gross luxuriance of the herbage has been such, as to do an incalculable injury to the sheep, particularly the lambs, by inducing the scour. The manuring of young seeds, would perhaps be advisable on suitable land, not over rich, or high conditioned, provided it would not be seriously injurious to the stock, but at Swaythorpe the practice is discontinued, for the reasons above named.

The seed wheat is also put in by the drill, in rows 7 inches a-part, and about 4 bushels per acre. Great care is taken to select the seed, with a view not only to its relative value in the market, but also to the most judicious change to the land, from the soil on which it had been previously grown.

This crop concludes the course and is followed again by the fallow.

The crops at Swaythorpe are generally remarkable for their abundance and gross appearance, sometimes to a degree almost beyond belief.

The reaping is always performed with the scythe, and as the crops are often for the most part laid, this is a work of no trifling difficulty; but a greater quantity of straw and consequently of manure is obtained

than when reaped by the sickle; and the ploughing and working of the stubbles is rendered easier.

In tedious and unfavourable harvests great care is required to prevent the seeds being injured by the stooks. The removing of these (often unusually rank) on upwards of 100 acres of ground is attended with considerable labour, and at a time too when it is generally wanted to be otherwise employed, but often necessary as a very short time will make the difference between no injury, and complete destruction to the seeds on which the stooks have been placed.

The stack-yard at Swaythorpe immediately after harvest presents a very formidable appearance. The stacks are placed in rows often each, on the west side of the farm-yards, with sufficient room for a laden waggon to pass not only between the rows, but between every two stacks in each row. They are all nearly of one uniform size and shape, containing about 40 loads each, thatched and secured in such a way as effectually to resist the penetration of the wet as well as the high winds to which they are exposed in this bleak situation.

The corn is chiefly thrashed by the flail, and gives constant employment to six thrashers, from the conclusion of harvest to the following May or June.

A portable thrashing machine too is frequently used as occasion may require, (generally once a week) when the cattle, from the severity of the weather, or other reasons, require an extra provision of straw.

The advantage of hand or flail thrashing consists in having the straw always fresh, regularly supplied to the cattle, and equally distributed over the yard, which cannot be the case when thrashing is done entirely by the machine.

This machine (by Mr. Crosskill of Beverley) on a new principle, and exceedingly portable, is wrought by four horses, will thrash 40 quarters per day, and gives, I understand, entire satisfaction. To the horse part of this machine a straw cutter and turnip slicer are made to be attached, when either may be required.

When so large a quantity of straw and corn have to be turned over in the year, capacious barns are necessarily required, and extensive fold-yards for the purpose of facilitating the decomposition of the straw.

Until lately the fold-yard and out-buildings have been insufficient for these purposes, having been erected at a time when the productive capabilities of the farm, were not so extensively developed as they have been of later years. Another fold-yard containing a clear area of 44 yards square, has recently been added, and surrounded with buildings of a most substantial description. The open sheds belonging to this yard occupy a space of 350 square yards.

The original one is a trifle smaller. In the former of these from thirty to forty oxen, and in the latter the same number of heifers are kept during the winter or thrashing season, and supplied with, besides the requisite quantity of straw, five cart loads of turnips per day; amounting altogether to about one tenth of the crop, as before mentioned, and 4 lbs. or something more than half an English linseed cake each. The turnips are sliced in the manner above named, which is found to be a great saving both in the necessary labour, and in the article of food itself; for the machine which is then easily propelled by one horse, will cut a large two-horse cart load in the short space of three minutes. Any waste too is prevented by the turnips being sliced in the most convenient size for the cattle, so as to ensure their being all eaten clean up.

They are given one portion in the morning, and the remainder in the afternoon, the cake immediately after the servants' dinner. These times being not only the most proper, but the most convenient for giving the food in the shortest space of time, so that all the beasts may have chance alike. The regularity too prevents the anxious lowing of the cattle in expectation of their daily supply. The cakes and turnips are given in square cribs or tumbrils, each divided into four compartments, and kept perfectly clean and sweet. The water is supplied in a large stone trough in each yard, from a pond or reservoir on a rather elevated situation in a field adjoining the yards. It is conveyed by pipes, and the supply regulated by a floating ball, attached to a valve by a beam or lever. As the water sinks below a certain level, the ball is depressed, and the valve at the other end of the lever consequently raised, and a fresh supply admitted. Thus a constant supply of the very best kind of water is always maintained without labour or expense, other than that of first fixing the apparatus.

The beasts are of the short-horned breed, and the excellence of their quality is a sufficient evidence that great care and judgment are required to select them in a country not proverbially famous for its superior breed of cattle.

As may naturally be supposed, these beasts, after being wintered in the manner before described, are in a state to be soon fit for the butcher. On leaving the straw-yard, they are taken to a track of rich grazing ground adjoining the occupier's residence, at Scarbro, near Beverley, and there made up and all disposed of before Midsummer, when from their prime condition, and the time being between that when the generality of winter and that of grass fed beasts are brought to market, they command the very best of prices.

In fold-yards of this magnitude, and where so much cattle food is daily distributed, there must necessarily be scatterings which afford keeping for a considerable number of pigs. This kind of stock is not neglected, 70 or 80 of them are kept in these yards during the winter, of a size and quality but rarely equalled, and which tends also materially to forward the process of turning the straw into manure.

The yards immediately on the beasts being taken out are emptied of the manure, which after being once or twice turned, is nearly all laid on the seeds for wheat. The manure from this large number of stock, and the manner of their keeping is of course extremely rich and fertilizing, and accounts in some degree for the abundant crops for which this farm is remarkable.

The Draught horses (except those for the team, which are somewhat heavier) are of the well-known Yorkshire coaching breed, being chiefly selected from such as through some slight blemishes or defects, are not eligible for the London markets. They are found to be more serviceable on land of this description than the heavy blacks, for besides being equal to them in constitution and powers of endurance, they are superior in point of *tractability* and activity.

They are fed almost entirely from the manger; an unrestricted allowance of cut oat sheaves with oats mixed, together with a little cut hay, forming the almost unvaried mixture of their food.

Cows are kept only of necessity, for the purpose of supplying milk, &c., for the household.

The buildings and homestead at Swaythorpe, with the exception of the house, which is small, are extensive and well arranged. The stables and chaff-houses on the north; the barns and cart-sheds on the west; the open sheds chiefly on the east; and the

cow-houses, piggeries, tool-house, slaughter-house, &c., on the south. The utmost order and regularity are observed in all the appointments, indeed there seems to be a place for everything, and everything in its place.

The grass land, as said before, consists of 170 acres, of which not more than 20 acres are mown in each year, and the hay given partly to the ewes in the lambing time, and the other sheep when circumstances render it necessary. The remainder of the grass land has, for a long succession of years, been eaten by sheep, which together with frequent dressings of manure and compost, has made this land productive of a short well set herbage almost peculiar to itself, carrying nearly all the year round an unusual quantity of breeding or holding stock.

The sheep stock at Swaythorpe consists of 450 ewes, and their two years' produce. The wethers, and others intended to be fed, are shorn once, fattened, and disposed of early in the following spring. Sometimes, when the quantity of keeping, or the markets seem favourable, they are shorn a second time, and sold immediately afterwards. The cutting of turnips is commenced for the hogs immediately on their being put upon them, and the quantity cut is increased as the sheep become accustomed to the eating of them in this manner, until it amounts to one-half or two-thirds of what they require. In the spring, when on the Swedish, the whole is cut for them. About half a pound of linseed cake each per day is also given them; or sometimes a little barley instead. They are supplied, too, with a small portion of hay, when beginning the turnips, in order to counteract the injurious effects which the succulent and watery nature of that food has tendency to produce.

The sheep at Swaythorpe are deserving of notice; Mr. Hall and his predecessors having been for many years well-known breeders of rams. The stock are consequently superior to what are possessed by common farmers: they are descended from the Leicester, with judicious crosses from the best Yorkshire breeds. They seem to possess good constitution, size, and symmetry, with plenty of excellent wool, and aptitude to fatten. They are in considerable request, particularly with those, who, from too strict an adherence to fine breeding, have acquired an over-delicacy of frame and constitution. One recommendation they eminently possess—a recommendation of too great a rarity—they have no extravagant or improper keeping, and are therefore more useful and valuable to the breeders who may have them.

When sheep are kept in their natural state, as these are, there is less deception in their appearance—they are more healthy and active, and better able to undergo the fatigue of following the ewes in the season.

It is now, unfortunately too common to see rams pampered for twelve months previous to the show-day, with a most prodigal abundance of the most fattening ingredients that the ingenuity and experience of the breeder can devise, they are brought to the show-ground disguised under a load of superfluous fat. They are engaged by the farmer six or eight weeks previous to the time when he wants to use them, who then finds it necessary to reduce them as it is called—a work of no great difficulty, by the way, for having long been fed on savoury meat in the most tempting and seductive manner, they make but feeble efforts to obtain their living like other sheep, and by a change from the most sumptuous fare to comparative gaol allowance, the work of reduction is easily accomplished. But what is the consequence? Instead of being, when put to the ewes, in a healthy

and vigorous state, they are weakened and relaxed—their generative powers are enfeebled—and, probably, after a little exertion, they become sickly, lame, or disordered in some way or other; for there is scarcely a disease that mutton is heir to, which is not engendered by this preposterous way of keeping. Need we wonder, then, at the innumerable complaints of deteriorated, defective, and impotent rams? The wonder is, that the effects are not ascribed to their proper cause. The breeders of sheep doubtless find the account in thus encumbering them, for fat, like charity, covers a multitude of defects. But a lasting stigma must attach to the judgment of those who hire or purchase rams, so long as the breeders are under the necessity of masking them under a load of fat, at an extra expense of 2*l.* or 3*l.* per head, by which they are rendered of 2*l.* or 3*l.* per head less value, in order to ensure a demand for them.

These observations are not made with a view of puffing one breed of sheep at the expense of another, but only for the purpose of reprobating a system so disgracefully and palpably injurious to all parties concerned.

The meadows at Swaythorpe receive frequent dressings of lime compost, and manure, and produce very ample crops, which, from being generally spring eaten, and the bleak and exposed situation, are commonly cut late in the season.

The management of the fences is not the least remarkable feature in the system of farming at Swaythorpe. The neatness and regularity of these cannot fail to attract the attention of the most careless observer of rural affairs. They were formerly exceedingly bad. Of late years many of them have been replaced with young wood, and the remainder so carefully trained and remodelled, as to make them scarcely distinguishable from the new. They are from four to five feet in height, and are plashed every year in what is termed the hog-maned fashion, that is, from three to four feet wide at the bottom, and regularly tapering to a point or ridge, in the form of the capital letter A.

This both reason and experience have long since decided to be the most proper mode of cutting fences, as the lower part is not then overhung, or injured by droppings from the upper. All parts have then an equal chance of putting out young shoots, and the fence is preserved full and uniform from bottom to top. The plashing is done with the utmost exactness, so much so that it may almost be said, there is not one perceptible inch of deviation from accurate straightness, in any fence of the greatest or shortest length; which gives a remarkably neat finish to the appearance of the farm. A person not used to witness so much, and such well-kept quickwood, might suppose it to be attended with an extraordinary labour and expense; this however is not the case. The operator will go over them with surprising facility and despatch, habit having seemingly made it more difficult for him to do his work ill than well.

The gates are in good order, and made more in the useful than the ornamental style.

The ponds are chiefly artificial as is common on the wolds, being circular; lined with well tempered and impervious clay; and covered with small broken chalk.

The minor features of the system pursued at Swaythorpe, are on the same liberal scale, and distinguished by the same regard for neatness and regularity. Indeed the apostolic injunction, "let all things be done decently and in order," seems here to be duly appreciated, so far as the general appointments of the farm go. One thing however tends materially to promote this regularity.

The servants are not men of yesterday; having most of them been for a long period in the same service. Each man therefore knows his work, and can do it.

This reflects credit equally on master and man. We too frequently hear complaints of the idleness and negligence of servants, that they are profligate and extravagant, that no good ones are to be found, &c. But these constantly recurring complaints should be listened to with a suspicion that the faults are not all on one side. Nature, in compounding the human race, did not put all the christian virtues into the composition of masters and mistresses.

As far as a natural regard for honesty and integrity, and a proper sense of the various duties and obligations of man to man are concerned, it is but fair to presume, that both parties, in the aggregate, are constituted alike. That there will be bad masters as well as bad servants, and good servants as well as good masters, is certain.

A good servant may not distinguish himself as such when serving an indifferent master, his abilities and willingness are not properly called forth, but good masters make good servants, and bad ones are seldom suited.

It must not be understood that this report proceeds from any authorised source, such is not the case; it is compiled from information gathered by a stranger, on a casual visit in the neighbourhood, and by a personal inspection of the farm.

In conclusion, it may be observed, that from the present appearance of the farm, a cursory observer might suppose it to be land of a first-rate quality, but the fact is otherwise, as might be proved if necessary.

The appearance and remarkable produce of it, is more the result of a continued course of superior management, than of the natural quality and productiveness of the soil.

It is not intended to be inferred that perfection in every, or in any part of the process of farming, is to be seen on this farm; perfection in the details of farming as well as other things, like the bird of paradise, is oftener talked about than seen. But this may be said of every farmer who may have an opportunity of visiting Swaythorpe, should do so, and after seeing the system pursued there, should go home with a fixed determination to do likewise; ninety-nine out of every hundred of such visitors would become better managers than they are at present.

And if all the soils in this kingdom were cultivated in the same spirited and liberal manner, according to their respective qualities, it may be safely asserted that the national produce would be nearly, if not fully doubled, from what it is at present.

Such however is the spirit of enterprise that is now animating the agricultural population of this country, consequent on the establishment of innumerable agricultural associations, and the general spread of intelligence.

Such is the aid which the scientific enquirer is giving to the practical husbandman, by unveiling to him the principles of germination and vegetation,—the nature and food of plants—the properties, fertility, and adaptation of the various soils and manures.

In short, such is the march of intellect which is now in progress among that class of men, who have hitherto been behind every other in the pursuit of knowledge and information, that we may confidently expect to see, if destined to live one short half-century longer, such an improvement in the system of tilling and grazing the soils of this country that their

produce will be increased beyond anything that the most credulous of our fore-fathers could have believed.

Then shall we see the problem of “Is or is not this country capable of producing a sufficiency of food for the whole of its population,” practically solved. Then shall we see the inhuman and impious doctrines of Malthus and our population—of Wilmot, Horton, and emigration, (or expatriation,) refuted and exploded.

Our legislators may then be sensible of the reproach which they have merited, by listening to, and adopting schemes so utterly repugnant to every principle of justice, and natural rights, and so diametrically opposed to the Divine Ordinances. They may then be induced to repudiate the chimerical doctrines of reciprocity and free trade, and to legislate on the principle that Britain is not so much dependent on commerce, but that *Agriculture is the grand source of National Wealth.*

Feb. 18, 1839.

A. W.

THE ENGLISH AGRICULTURAL SOCIETY.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Is it in your power to obtain from the Secretary of the English Agricultural Society *decisive* information as to whether cross-bred sheep will be admitted in competition in either, and which class at the ensuing Oxford Meeting? I have been kindly favoured with the individual opinion of the Secretary, but I think the intention of the Society should be officially made known on this point, as it will require no little care and expense to bring animals to the “scratch” under the present rules and regulations, of which in so far as regards the sheep, I, with the great majority of my brother farmers, very much complain. There is no restriction as to feeding—even the shearling ewes, or ewes with lambs; every one knows what a complete revolution corn or cake will effect in the appearance of an animal. So much so that the fellows of those bred and fed on arable land (as seven-tenths of the most useful sheep are) when corned, would scarcely be believed to belong to the same species—therefore I contend they are not shewn with their true and natural qualities. It may be urged in answer to this objection, that all may feed with corn or cake if they choose, but tenant farmers, men who have their livelihood to get by the business, cannot indulge in these fancies—and if they were to do so, what criterion of the general merits, or natural characteristics of the Hampshire, Wiltshire, or Sussex stock, which are necessarily a folding sheep, is there to be gathered from the exhibition of five ewes or lambs—cooped up in a shed from Christmas, until the last breath of winter has passed away, and crammed with all sorts of forcing artificials? There are now, within twelve miles of me, two individuals, preparing their Down sheep in this very manner for the Oxford shew, whose stock at home, will bear about as much comparison to those exhibited, as a Jersey cow does to a Christmas Smithfield ox; it is a practice, Sir, which will be condemned, *unâ voce*, by all practical men, and all rules sanctioning it, ought to be blotted out the books of a Society, professedly established for the encouragement of “a profitable system of agriculture.” It may do very well for noblemen or gentlemen with parks, or their bailiffs, who have deep pockets to draw from, but it will deter many a practical agriculturist from exhibiting his stock, and

what is worse lead to erroneous decisions, for the Judges do not live, how great soever their experience, who will not be either deceived or baffled by loads of unnatural tallow. It is very much regretted in this part of the country, that the grand day at Oxford is fixed for the one immediately preceding the great sheep and lamb fair at Overton, the largest, with the exception of Weyhill, in England. All the most celebrated breeders in Hants and Wilts make this their shew-day, on which occasion it will be evident their presence at home is indispensable; added to which nearly the whole of the graziers from the counties of Oxford, Bucks, Berks, Hertfordshire and Cambridge, make a point of attending this fair, to buy in their lambs or ewes, so that this meeting, which seems to have been fixed to take place at Oxford, for the especial benefit and accommodation of these counties, will in a great measure fail of the intended purpose, unless it can be so arranged that the day may be altered.

I am, Sir, Yours respectfully,
J. T. TWYNAM.

Whitchurch, Hants, March, 6.

ON BREEDING STOCK.

In observing that the exertions of agricultural societies generally, have hitherto been directed to the *feeding* rather than the *breeding* of stock, we would not be thought to underrate the importance of the former object. Whilst, however, we are willing to award his full desert of praise to the *feeder*, we cannot lose sight of the important fact, that he can only be successful in proportion to the aptitude for feeding which the animal upon which he exercises his skill possesses. Considerable judgment is unquestionably requisite to enable a purchaser to predicate what may be the disposition of animals to feed, by the usual mode of inspection and handling: but in our estimation, the skill and judgment which the breeder must possess to enable him to prosecute with success his particular department, far exceeds that required by the feeder. To encourage skill in breeding—to record the principles upon which it rests, and to diffuse the knowledge of those principles as widely as possible, is an object of paramount importance. Coarse, ill-shaped animals, wanting in those qualities which evince a disposition to feed kindly, and lay on flesh, in these points which render the carcase most valuable, will consume as much food in the rearing as those of a superior character, and when they meet the eye of the experienced purchaser in the market, if not neglected altogether will realize much less than the more perfect animal. Hence there is not only a positive loss to the breeder by having wasted his food upon an animal which fetches him less money, but also a deficiency created in the amount of marketable produce which might have been made available, a larger quantity of food than necessary having been consumed in producing a given quantity of meat. In perusing lately the Rules and Regulations of the Jersey Agricultural Society, we were particularly struck with one part of the instructions laid down for the guidance of the judges in awarding the prizes offered by that Society. There is a “scale of points”

or certain points of perfection fixed upon, of which it is necessary that the animal should possess a certain number to be considered deserving of a prize. The widely different character of the Jersey breed of cattle would necessarily render the particular points enumerated inapplicable as a whole to our breeds; but we are of opinion that if a “scale of points” applicable to our leading breeds of cattle were arranged in the same manner, not so much for the guidance of judges in awarding prizes at agricultural meetings, they being supposed to be perfectly acquainted with them, but for general distribution amongst the farmers, who are less skilful in the knowledge of good stock, it would be productive of much good. As a sort of table in the hands of youth, it would fix upon the mind, and direct attention at once to those “points,” in acquiring a knowledge of which they may be as much indebted to chance as to assistance from the experience of others. We subjoin the “scale of points” for Jersey cattle, and if any of our readers would favour us with a scale upon a similar plan, applicable to Short-Horns, Herefords, and Devons respectively, we should esteem it a favour. The subjoined “scale of points” has especial reference to the capability of *producing butter and milk*: these, of course, are not the “points” of excellence to be set forth as applicable to *all* our English breeds.

SCALE OF POINTS FOR BULLS.

	Points.
ART. I.—Purity of breed on male and female sides, reputed for having produced rich and yellow butter	4
II.—Head fine and tapering, cheek small, muzzle fine and encircled with white, nostril high and open, horns polished, crumpled, not too thick at the base, and tapering, tipped with black, ears small, of an orange colour within, eye full and lively	8
III.—Neck fine, and lightly placed on the shoulders, chest, broad, barrel hooped and deep, well ribbed home to the hips.....	3
IV.—Back, straight from the withers to the setting on of the tail, at right angles to the tail. Tail, fine, hanging two inches below the hock	3
V.—Hide, thin and moveable, mellow, well covered with soft and fine hair of a good colour.....	3
VI.—Fore arm, large and powerful, legs short and straight, swelling and full above the knee, and fine below it	2
VII.—Hind quarters from the huckle to the point of the rump, long and well filled up; the legs not to cross behind in walking	2
VIII.—Growth.....	1
IX.—General appearance	2

PERFECTION 28

No prize to be awarded to a Bull having less than 20 points.

SCALE OF POINTS FOR COWS AND HEIFERS.

ART. I.—Breed, on male and female sides reputed for producing rich and yellow butter.....	4
II.—Head, small, fine and tapering, eye, full and lively. Muzzle fine and encircled with white, horns polished and a little crumpled, tipped with black, ears small, of an orange colour within ..	8
III.—Back strait from the withers to the setting on of the tail, chest deep and nearly of a line with the belly.....	2
IV.—Hide, thin, moveable, but not too loose, well covered with fine and soft hair of good colour..	2

	Points.
V.—Barrel hooped and deep, well ribbed home, having but little space between the ribs and hips, tail, fine, hanging two inches below the hock	5
VI.—Fore legs, strait and fine, thighs full and long, close together when viewed from behind; hind legs short and bones rather fine; hoof, small; hind legs not to cross in walking	2
VII.—Udder, full, well up behind; teats, large and squarely placed, being wide apart; milk veins, large and swelling	4
VIII.—Growth	1
IX.—General appearance	2

PERFECTION FOR COWS 30

Two points shall be deducted from the number required for perfection on heifers, as their udder and milk veins cannot be fully developed. A heifer will therefore be considered perfect at 28 points.

No prize shall be awarded to cows, or heifers, having less than 21 points.

THE ENGLISH AGRICULTURAL SOCIETY AND THE VETERINARY COLLEGE.

The importance of the Veterinary science to agriculture induces us to regard our friend the Editor of the *Veterinarian* as a fellow labourer in the same field. The number of this periodical for March excels in the amount and character of the articles which it contains. We are happy to perceive by the observations on the establishment of Agricultural Schools that he coincides with us in the importance of inculcating in the youthful mind the principles to be afterwards carried out by practice in the pursuit of his occupation. We had hoped that, ere this, some effective steps would have been taken to complete the arrangement proposed by the English Agricultural Society, of co-operating with the Veterinary College in adopting means for better instructing the students in the knowledge of the diseases of cattle, sheep, and pigs. We regret exceedingly that any person should be found to offer opposition to an object of such immense importance to the practising veterinarian himself—to the agriculturist—and to the public at large. We subjoin Mr. Youatt's remarks on the subject from the leading article of the "*Veterinarian*."

"No conference, we believe, has yet taken place between the Governors of the Royal Veterinary College and the Directors of the English Agricultural Society; but only a short space of time can now elapse before the primary arrangement will take place. The precise nature of that arrangement we profess not to know; but it will be worthy of the honourable men who will meet in consultation—it will be worthy of the Agricultural Society and of the Veterinary School. While no existing interests will be compromised—but far the contrary—those preliminary steps will, doubtless, be taken which will secure the full accomplishment of the noble objects so important to both parties.

"There, surely, will be no objection,—there can be no well-founded one—to the completion of the original, but too long neglected purposes of the veterinary school, and which would be so welcome and advantageous to every one connected with the agriculture of the country. We anticipate but one opponent; and the ground of his

opposition, whether arising from misconception or prejudice, or dislike or fear, we never could understand. Neither his lectures, nor the honararium which accompanies them, is in the slightest degree interfered with or at hazard; while his colleagues have expressed their approbation of the proposed extension of veterinary instruction, and the demonstrator, highly to his honour, is already working on the plan. No opposition will now be of avail; and by far the most prudent measure would be to make a merit of granting that which can no longer be refused."

ANSWERS TO QUERIES ON ITALIAN RYE GRASS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—An answer to the Queries on Italian rye grass.

Query 1st,—Will it do to sow in the spring with a crop of barley or other grain, as we now sow the common rye grass?

Answer,—It will.

Query 2nd,—With or without a mixture of clover seed?

Answer,—Whether sown for feed or seed, some Dutch clover or trefoil will help to fill up any vacant spaces, improve the crop, and not injure the rye grass.

Query 3rd,—Would there not be danger of its getting up so high as to injure the crop of barley, and would it not smother the clover in the first year of seeds?

Answer,—It will not get high enough to injure a crop of barley or other grain with which it is sown, nor will it smother the clover in the first year of seeds; it is more likely to draw the clover or trefoil up with very fine stems, but it comes too early for the clovers in use as a mixture for hay.

Query 4th,—Is it an annual, a biennial, or a triennial?

Answer,—It is considered as a perennial, but the old stools die in the second or third year on light soils.

Query 5th,—Is it a fit grass to mix with others for a permanent pasture?

Answer,—No; but it will do very well to mix with other seeds when fed off and ploughed up in alternate husbandry.

Query 6th,—Would it be better to sow it alone?

Answer,—Yes, if for seed, except sowing a small quantity of Dutch clover or trefoil to fill up the vacant places if any, and which will improve the feed after the crop is mown.

Query 7th,—Will it do to mow for hay and also to graze?

Answer,—It will do for both, but for hay it should be cut early.

Query 8th,—What description of soil is it best adapted for?

Answer,—Good deep loams that retain moisture, though in favourable seasons it will a large return on light land.

Query 9th,—Will it succeed on strong land with a retentive subsoil?

Answer,—It will very well indeed, if sown in good season and the land in proper order.

I am, Sir, your obedient servant,

G. K.

A TABLE

Containing the Average Annual and Decennial Prices of Wheat in England from the year 1770 to 1838, both inclusive: also similar Averages of the Price of Wheat at Dantzic, from 1770 to 1826; with the difference in price between England and Dantzic: also the Annual and Average Annual Excess of Imports above Exports of Wheat into Great Britain, from 1770 to 1838; together with the State of the Laws regulating the Trade in Wheat during the same period.
Winchester measure is intended up to 1826 and imperial measure afterwards.

	Per Qr. in England.	Ditto at Dantzic.	Differ- ence.	Quarters Imported.		Per Qr. in England.	Ditto at Dantzic.	Differ- enc	Quarters Imported.
	s. d.	s. d.	s. d.						
1770	41 4	23 4	18 0	Export.	1820	65 10	33 3	32 7	34,274
1771	47 2	31 6	15 8	Export.	1821	54 5	31 7	22 10	2
1772	50 8	33 8	17 0	18,515	1822	43 3	29 1	14 2	..
1773	51 0	35 8	15 4	49,220	1823	51 9	26 8	25 1	12,137
1774	52 8	32 1	20 7	273,321	1824	62 0	22 9	39 3	15,777
1775	48 4	33 11	14 5	469,951	1825	66 6	23 3	43 3	525,231
1776	38 2	27 6	10 8	Export.	1826	56 11	23 1	33 10	315,893
1777	45 6	22 4	23 2	145,637	1827	56 9	..	..	572,733
1778	42 0	23 9	18 3	Export.	1828	60 5	..	..	842,050
1779	33 8	21 10	11 10	Export.	1829	66 3	..	..	1,364,220
Average..	45 0	28 6	16 6	43,166	Average..	58 5	27 1	31 4	368,231
1780	35 8	19 4	16 4	Export.	1830	64 3	..	..	1,701,855
1781	44 8	24 9	19 11	56,845	1831	66 4	..	..	1,491,631
1782	47 10	26 3	21 7	Export.	1832	58 8	..	..	325,435
1783	52 8	27 5	25 3	532,240	1833	52 11	..	..	82,346
1784	48 10	28 10	20 0	127,659	1834	46 2	..	..	64,653
1785	51 10	30 2	21 8	Export.	1835	39 1	..	..	28,483
1786	38 10	29 2	9 8	Ditto.	1836	48 6	..	..	..
1787	41 2	29 2	12 0	Ditto.	1837	55 10	..	..	200,000
1788	45 0	29 1	15 11	65,739	1838	64 4	..	..	1,500,000
1789	51 2	43 8	7 6	Export.	1839	..	..	..	..
Average..	45 9	28 9	17 0	23,350	Average..	61 1	..	..	..
1790	53 2	40 4	12 10	191,665	STATE OF THE LAW.				
1791	47 2	31 6	15 8	398,430	1770 } Under 48s. per qr. a bounty of 5s. on exportation.				
1792	41 9	29 0	12 9	Export.	1773 }				
1793	47 10	32 0	15 10	413,529	1774 } Under 44s. a bounty of 5s. on exportation.				
1794	50 8	36 0	14 8	172,584	to } Above 44s. exportation prohibited.				
1795	72 11	57 9	15 2	294,954	1792 } Above 48. importation at 6d. a quarter.				
1796	76 3	54 3	22 0	854,521	Under 44s. a bounty of 5s. on exportation.				
1797	52 2	33 1	19 1	407,242	1793 } Under 46s. exportation without bounty.				
1798	50 4	32 10	17 6	336,939	to } Under 50s. importation at 24s. a quarter.				
1799	66 11	46 10	20 1	423,823	1804 } Under 54s. ditto at 2s. 6d. a quarter.				
Average..	55 11	39 4	16 7	321,609	Above 54s. ditto at 6d. a quarter.				
1800	110 5	73 9	36 8	1,242,507	Under 50s. a bounty of 5s. on exportation.				
1801	115 11	78 11	37 0	1,396,359	1805 } Under 54s. exportation without bounty.				
1802	67 9	53 5	14 4	498,359	to } Under 63s. importation at 24s. 3d. a quarter.				
1803	57 1	46 3	10 10	297,145	1815 } Under 66s. ditto at 2s. 6d. a quarter.				
1804	60 5	53 3	7 2	398,067	Above 66s. ditto at 6d. a quarter.				
1805	87 1	69 10	17 3	842,879	1815 } Under 80s. importation prohibited.				
1806	76 9	58 6	18 3	270,776	to } Above 80s. importation allowed.				
1807	73 1	..	..	379,833	1822 }				
1808	78 11	..	..	Export.	1823 } Under 70s. importation prohibited.				
1809	94 5	42 10	51 7	424,709	to } Above 70s. importation at 17s. a quarter.				
Average..	82 2	59 7	22 7	574,751	1828 }				
1810	103 3	53 4	49 11	1,491,341	Since 1828 the present scale varying with the price.				
1811	92 5	36 3	56 2	238,366	Dividing the 69 years comprised in the preceding				
1812	122 8	..	..	244,385	Table into three equal periods of the 23 years before				
1813	106 6	..	..	425,559	the French war, the 23 years of the war, and the 23				
1814	72 1	47 5	..	681,333	years since, the following results appear:—				
1815	63 8	46 1	..	..					
1816	76 2	57 4	..	225,263					
1817	94 0	75 8	18	1,020,949					
1818	83 8	64 7	19 1	1,503,518					
1819	72 3	43 9	28 6	122,133					
Average..	88 8	53 0	35 8	595,284					

ON THE CHEAPEST AND MOST EFFICIENT MODE OF SURFACE OR FURROW-DRAINING.

The conviction is now fast gaining ground among agriculturists that surface or furrow draining is the first and best improvement that can be made on soils possessing a retentive substratum, in numerous instances repaying the outlay in the first year, by the additional crop of grain or grass produced where very little grew before, and also that land so effectually drained can be worked at less expense, and in seasons when it would have been almost impossible to get on it without injury to the succeeding crop. The great expense of draining considerable quantities of land in any of the present known methods no doubt prevents many from beginning such a beneficial improvement, it therefore appears desirable that experiments should be entered into by practical farmers to ascertain what improvements can be made in draining, both as regards economy and durability.

The *cheapest* method practised in this neighbourhood is called clay-draining, which is to cut the top sod about three inches thick and lay it on one side, then another graft taken out, following with a narrower tool which takes a cut from the centre of the opening, which leaves a shouldering on each side, on these shoulderings the top sod is laid leaving the narrow channel underneath six or eight inches in depth for the water course, the drain is then filled in. Another method which is more durable than the last is to fill ten or twelve inches of a taper cut drain with thorns; the best thorns for the purpose, if they can be procured, is the black-thorn, or sloe-bearing-thorn, which will remain sound in the earth for some years, the whitethorn or hawthorn soon decaying.

The next best drain is that made either with pebbles or other kinds of stones broken, that part where the stones are put in being cut with a taper tool and filled with stones six or eight inches in depth, putting a little straw or stubble on the top before filling in, to prevent the mould running into the stones; this kind of drain (where the materials are near at hand) is the cheapest and most permanent of either of the drains mentioned. Tile draining has been practised in this county for many years but chiefly for deep draining. The usual mode of laying them has been to put them in without soles or only a small piece of flat tile under the ends, this might have answered tolerably well in deep drains and where there is a continual stream of water passing through, but in shallower drains or where they are only required occasionally to take off the surface water, they soon become filled with earth either by the sinking of the tile, by moles filling them up, or by the expansion of the earth into the tiles from the treading above, therefore, to put in tiles for surface draining without using flat tiles entirely underneath is to throw away the heavy expense of the tiles and the labour of cutting and filling the drains, as they become useless in a very few years.

Where landlords find the tiles, or contribute to any part of the expense, they ought to be very particular that the draining should be done in such a way that it may be a *permanent* improvement to their estates, as the outlay for effectual draining of land is very considerable in our present methods of draining, and requires the utmost vigilance in overlooking the work in progress.

I am convinced that vast sums of money have been expended in this county so carelessly or ig-

norantly that millions of tiles are now lying in the land completely useless, and the land in want of effectual draining as much as ever.

Occupying land requiring to be thoroughly drained (if farmed to any profit) I have been some years considering how to attain that object in the most effectual manner, and at the least expense, at the same time to make it a permanent improvement; I now (after three years experience) flatter myself I have succeeded in making a tile-drain much cheaper and more durable than any I have ever seen or heard of.

I shall now detail the method I am making use of, hoping that some intelligent agriculturist or scientific mechanic may invent a machine to manufacture the tiles at considerably less cost, that tile drains (being the most permanent) may supersede by their cheapness every other kind.

The kind of tile I am now using is a perfect tube, a foot in length, with a bore or opening of two and a-half inches, and some of larger bore for cross and main drains. They are remarkably strong as may be supposed from their circular form, therefore stand carriage or pressure much better than the common arched tiles. The best way of making drains with them is first to dig out a spit of earth, say eight inches in depth, then turning the tool sideways take out ten inches more, making the cut taper down to the width of the tile in the bottom, then with a scoop clean out the crumbs of earth. A rammer, (with a peg four inches long, standing out near the bottom) takes up the tile, and lowering it into the drain is then used to hit up the tile endways to the one laid before, and afterwards firm it down level in its bed—the cut being made to fit the tile exactly, it is now so firm that nothing can displace it, it being in the firm subsoil, therefore the drain may now be filled by raking in the earth with a three pronged fork similar to those used to draw out manure from carts, or any other way that will make the greatest dispatch.

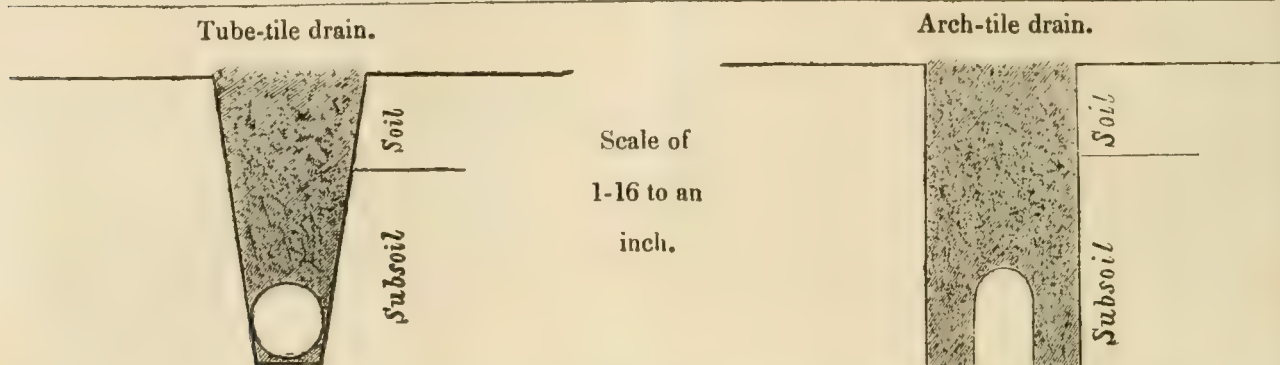
Now to suppose that there is no objection made by some persons to these kind of tiles, would be to exempt them from what occurs to every new implement of agriculture when first brought forward. The only objection made to them is, that they are not likely to admit the water from the surface sufficiently quick, having the opening at the ends only, but experience proves the contrary; the ends of the tiles being rough and uneven leaves plenty of opening for the admission of water, although put as close as possible; added to which there are four of those joints in every yard, and the tile being smooth inside, the water meets with no impediment but discharges itself very fast. I never find them stop or the water remain any longer on the surface than the arched-tile drains which I have placed alternately to test them.

I will give an instance or two to show how well they succeed. I drained the lower part of a field in 1836 (a wheat fallow) with drains 110 yards long, an ascent of considerable elevation and length remained undrained at the upper part of the field, from whence a great quantity of water runs down on the drains in rainy weather, the drains take the whole of the water as fast as it comes, both from the surface and the acclivity above. The field was in clover last year and is now planted with wheat. The drains are perfect, and that part of the field which was the worst is now the most valuable; the soil and subsoil is of a very retentive quality. I also drained a field, the soil of which is blue lias-clay, a more retentive or adhesive soi-

cannot be found in the kingdom; in a partially wet state it cannot be ploughed except with a plough entirely made of wood. The drains on this field have worked admirably for three years, the furrows are now drier than the tops of the ridges were before.

There is still a greater proof of these kinds of tiles answering well, which is that my neighbours were prejudiced against them until they were persuaded to try them; they are now using them ge-

nerally in preference to the common tiles, although some drainers have endeavoured to persuade their employers that they would not answer; their motives were obvious, because these tiles are put in more simply and at much less expense. I think, by giving a section of a common tile-drain and a tube-tile drain, it will be very evident to the eye which of the two is best calculated to resist any injury from pressure or treading from the surface.



The tube tile drain above is in width at top eight inches, at the bottom four inches, the depth 18 inches. The soil six inches, and the subsoil 12 inches.

The arch tile drain above is nine inches in width at top, and eight inches at the bottom, (being as narrow as they can be cut to admit a man to go into them to lay and back up the tiles) depth 18 inches, soles being laid under the arch tiles.

It will appear from the difference in the form of the two drains that if a horse walks on the arch tile drain in wet weather, when the soil is tender, there is nothing but *depth* of soil to prevent his treading down to the tiles and breaking them, or displacing them on one side, or sending the soil down so firm round the tiles as to render them impervious to water. But the case would be widely different in walking on the tube tile drain, this drain being taper and so narrow in the bottom the pressure would be lateral instead of perpendicular, which would prevent the foot from reaching near the tiles; but even supposing it did, it would neither break the tiles, from their great strength, nor shift them out of place, from their being fitted firm in the subsoil. From what has been stated it will be evident that the tube tile drain may, with safety, be put much nearer the surface than the arch tile drain can or ought to be, and does not require above half the quantity of earth removed in the making. I have said before that the tube tile drains are cheaper than the common ones, therefore shall proceed to show it in figures, as charged in this neighbourhood.

	£.	s.	d.
1000 Arch tiles 12 inches each, at 30s. per thousand.....	1	10	0
1200 Soles, 10 inches each, at 20s. per do.	1	4	0
	2	14	0
1000 Tube tiles, 12 inches each, at 40s. per do.....	2	0	0
Saving by tubes.....	0	14	0
Cutting, laying, and filling up drains, per thousand, with arch tiles and soles.....	0	14	0
Do. do. with tube tiles.....	0	10	6
Saving in labour....	0	3	6

Having written more on this subject than I first intended, I hope it has more clearly shown that this kind of draining is the *cheapest*, most *efficient*,

and *durable* of any kind of tile draining yet practised, and should a machine be invented to manufacture the tiles at half the present cost, (which I think possible) the expense of furrow draining will be reduced within the reach of every farmer who has but a few years' interest in the land he cultivates, and who will, when he sees his intelligent neighbour reaping the advantage of such a beneficial improvement, awake from his lethargy and bestir himself to overtake the march of improvement now rapidly going forward in agriculture, and which will be still farther required to make the cultivation of the soil a safe employment for capital.

Through any agricultural society, or the "Farmers' Magazine," I shall have no objection to give any information on the subject, but cannot answer individual inquiries.

A plough is constructing for cutting the drains, should it answer the purpose intended, it shall be communicated to the public at a future period.

RICHARD SMITH.

Upper Hall, Worcestershire.

NITRATE OF SODA.—QUERY?

SIR,—At this moment, when Parliament is about to deliberate upon measures of such vast importance to the agricultural interest, I am aware the minds of practical men are too much engaged in matters of deep anxiety to attend to the details of practice; but as times and seasons are above legislative controul, I trust some of your able readers will be kind enough to give me information upon the merits of nitrate of soda, as a manure for spring corn; the quantity required per acre, the proper mode of application, whether broadcast or by drill; or, if mixed with soil, to be ground small, or to be dissolved, and the soil watered previous to drilling. By inserting the above query in your widely circulated journal, you will greatly oblige yours, &c.,

AGRICOLA.

REPORT ON SUBSOIL AND TRENCH PLOUGHING.

BY MR. ROBERT LAING, JUN., CAMPEND, NEAR DALKEITH.

(From the Quarterly Journal of Agriculture.)

There is not perhaps, in the present state of agriculture, a subject of such general importance to tracts of thin clay lands, as the application of subsoil and trench ploughing,—the beneficial effects on crops after these have been *properly* applied, but especially the former, being almost incredible.

The soils to which these modes of ploughing are applicable are, in my opinion, the same; as in no one instance have I found trench ploughing, where draining and subsoil ploughing were not required, of the least advantage, excepting on deep *dry* loams; on the contrary, when prosecuted on land where these two necessary accompaniments of all good farming had not preceded it, the consequences have been highly detrimental; in short, trench ploughing requires to be used with the greatest care, as in most cases it will be beneficial only after the subsoil has been ameliorated by the admission of air and water into it by means of previous subsoil ploughing.

I approve more of subsoil than trench ploughing; not that the latter is unnecessary, but because the expense incurred by the previous indispensable operations of draining and subsoil ploughing renders it almost impossible for the means of a tenant to undertake it when he is not assisted by his landlord, as is too often the case. I think it will generally be admitted that subsoil is more essential than trench ploughing, because its corresponding effects are greater.

I am also of opinion, that subsoil ploughing is an indispensable accompaniment to furrow-draining; and in my experience, I have found land to be more thoroughly dried after it (especially when there was any approach to clay in the subsoil,) with a drain in every alternate furrow, than with a drain in every furrow without it; in fact, in a stiff clay subsoil, I have seen drains of little service, the water for some time standing on the top of them till evaporated, while in the very next field which had been subsoil ploughed, there was an immense flow of water from every drain, and not a drop to be seen on the surface.

I commenced subsoil ploughing in the month of November, 1836, a season it will be remembered, remarkable for its early winter; the ground having been covered with snow in October, and a succession of wet weather continuing during the whole season, rendered the circumstances under which I commenced most unfavourable. The field in which operations were commenced, consisting of ten Scottish acres, was at the time and during the whole operations, so saturated with rain, that the horses' feet sunk in the unploughed ground from four to six inches, which showed that though there was a drain every alternate furrow, they had not yet drawn the water from the stiff retentive subsoil. This circumstance convinced me the more of the necessity of persevering in subsoil ploughing, which alone enabled me to accomplish my object of thoroughly drying the soil, despite of the obstacle I had to overcome of the horses not working well together at first, increased by the wet state of the land, and not at all diminished by the unwillingness of the ploughmen to proceed in a work which they denounced as nonsensical, and as doing "naething but hashing their horses." But since these operations were finished, so apparent have the benefits been from

them, that the same men now think they cannot do enough of that kind of work; so that last winter my head ploughman, in addition to fifteen acres gone over, wanted to plough another field, which I would have assented to had it not been for the apprehension of rendering inefficient a great number of cross-drains that had been made several years ago under the old system of filling up with stones to the surface.

Notwithstanding the disadvantages consequent upon the wet state of the field, the results have been of the most flattering description. Since the work has been finished little or no water has stood on the surface; and in the spring of 1837, this field which was usually the last workable on the farm from its wetness, was the first; and it had the advantage of the land working like loam, when compared with the solid soured furrow that was wont to be turned up. The field was drilled with beans, and the crop fully realized my expectations, and I think established the advantage of subsoil ploughing; for it produced 6 quarters per Scotch acre, which was at least one-fourth part of greater produce than it had ever before yielded; and I am confident that had it not been for the subsoil ploughing, the crop must have been deficient; because from the wet state in which the land would have been ploughed, and probably souring all winter, the case would have been the same as with the adjoining field the previous season. In 1838, the same field produced a good crop of wheat after beans which all stood till cut down, and was equally strong in the furrow as on the crown of the ridge. Off 2 acres 2 roods 21 falls, were thrashed 15½ quarters good, and ½ quarter second wheat, being nearly at the rate of 6 quarters per Scotch acre. This is considered in any season a good crop, but more especially in the present season, when the prevailing opinion is that the average of wheat over Scotland will not exceed 3 quarters per Scotch acre.

November 1837 was more favourable to the prosecution of subsoil ploughing than the winter of 1836, and an extent of 15 Scotch acres was subsoil ploughed. About ½ an acre of the field was ploughed in the usual way; but so marked was the difference in the bean crop, that on the part that was not subsoil ploughed they were not only shorter, but not nearly so broad in the leaf, a pretty clear proof that they were not so luxuriant, and on every part of the field, in the furrows as well as on the intervening spaces, there was a very great crop. I have no hesitation in stating that the produce will be eight quarters per acre, which is nearly double what is usually produced in any year, but particularly in this when the bean crop in this district and in East Lothian has proved almost a failure. The half acre not subsoil ploughed was not a bad crop; and I think it was benefitted from the land above and below it having been subsoil ploughed. Its breadth having been only about 50 feet, and lying transversely to the declivity, that operation I conceive, had acted as a drain to it both above and under its breadth. In 1838, ten acres were summer-fallowed and subsoil ploughed; and I am so perfectly satisfied with the system, that I would recommend *all* land that has been furrow-drained, to be subsoil ploughed in the succeeding season, the one operation, in my opinion, being quite inefficient without the other.

I have often been told by those who receive no assistance from their landlords, that it was easy for me to drain and subsoil plough. Certainly, great is the advantage of partaking of the liberality of my noble landlord, Lord Viscount Melville; but refusal from a landlord I hold to be no excuse for a tenant

to neglect draining, because it will ultimately advantage himself; for example, it is the general practice of all good farmers, for six miles round Edinburgh, to give their land for green crops, 40 tons per Scotch acre of manure, which at 5s. per ton costs 10*l.* per acre. Were land well drained, a better crop would be raised with 20 tons. Draining every thirty feet asunder, that is, 16 roads of 36 yards, at 5s. per rood, costs 4*l.* per acre, which with 5*l.*, the price of 20 tons of manure, costs in all 9*l.* per acre, which is a saving of 1*l.*, and at the same time the acquirement of a permanent improvement in the land. But although draining was to cost 2*l.* per acre additional, I am certain the benefits resulting from the small quantity of manure, when the land is made dry, would be greater than those from double the quantity of manure used on undrained land: and it requires no argument to prove which of the two operations would be the more permanent in their effects.

It would however be much better for the land, and of course for both landlord and tenant, were a proper understanding on this subject established between them, as it is evident when a tenant can give the full quantity of manure it will be a mutual advantage; but when he is obliged to withhold part of that necessary ingredient for the purpose of expending the money in draining which would have been laid out in the purchase of manure, the landlord may depend upon it the draining will be performed in such a temporary manner, as only to be of service to the tenant while his lease endures; but were he to assist the tenant in making the drains complete and permanent, the tenant would be the better able to purchase manure and incur the additional expense of subsoil ploughing. It would be but fair, where a landlord assisted his tenant to the extent of two-thirds of the expense of draining, that an express understanding were made, that the land drained should be subsoil ploughed the next season, or as soon after as circumstances permit. This arrangement would be of incalculable advantage to both landlord and tenant; and were all landlords to co-operate with their tenants in this manner, their property would not only sooner be put into the highest state of cultivation, but a uniform progressive system of maintaining the land in fertility would be pursued by the tenants. Such ameliorating and amicable engagements should form the subject of covenants in every lease, until the whole land in the country were thoroughly drained and subsoil ploughed.

I have now stated all the facts in my own experience of subsoil and trench ploughing; and in confirmation of what I have stated, I may adduce the successful efforts of Mr. Smith of Deanston, Mr. Stirling of Glenbervie in Stirlingshire, and other gentlemen whose sentiments and experience are quite in unison with my own.*

It is unnecessary to enter into a lengthened detail of the efforts of Mr. Smith in successfully establishing the mode of performing subsoil ploughing, as these are well known to agriculturists through the pages of his pamphlet, published by Messrs. Drummond of Stirling. I shall therefore only advert to an improved plan of attaching the horses to the subsoil plough, the merit of which invention belongs to one of Mr. Smith's ploughmen.

At this date, 15th February 1839, twenty acres are about finished subsoil ploughing under the new me-

thod of attaching the horses, which is so great a saving of labour, that three horses are found to do as much work as four did, previous to this new method being discovered.

This new plan is, that the horses are yoked two and two, with a master-tree or main bar of the same length, but of twice the strength, as that used with the common plough; two single or swing-trees or bars equally strong, are attached to it in the common way, and at each end of the two swing-trees is fixed a pulley: chains twenty feet in length are attached to the haim-hooks of the rear horses, and come back through the pulleys of the draught bars, and thence to the leading horses; the leading horses require to be worked with the fore ends of common cart traces to which they must be attached. About two feet three inches from the collar of the rear horses a chain is required to keep the draught chains from their legs: pulleys fixed into two arms, eighteen inches long, answer better, as the chains by means of it, are also kept from their legs, and, while they work through the pulleys at the draught bars, also work through them. This mode of yoking the horses has not only the great advantage of the horses working easier, but also of equalizing the draught and making the plough more easily held.

In ploughing the twenty acres just mentioned, great advantages were derived from the muzzle or bridle of the common plough, invented by Mr. Stirling, and before alluded to. One great advantage of this invention is, that the horses going on the unploughed land, two work as easily as three did before; another great advantage is, that the new subsoil ploughed furrow is not trampled on at all.

The bridle I have had in use is attached to a plough in the usual way; it measures from the extreme hole on each side nineteen inches, in which space are eleven holes; an inch and a half is required at each end, (making the total length twenty-two inches) to which inch and a half is attached a chain two feet long, the other end of which is fixed to the beam of the plough immediately before the coulter; this is required to strengthen the bridle from the angle the horses draw at, so as to give the plough "less land."

Having now completed an extent of fifty-five Scotch acres with the subsoil plough to the depth of from twelve to fifteen inches, the results are so satisfactory, that on none of the fields has a water-furrow been required to be drawn or cleared out. About four acres of a field noticed in a former part of this paper, as being summer fallowed in 1838, is so level on the surface, that before it was drained and subsoil ploughed, after being sown it required a man four days, at 1s. 6d. per diem, to clear out the cross water-furrows. It was so level that after a fall of rain the ridge furrows stood brimfull of water; that same portion of land is laying at this present moment without a single furrow or cross water course of any description, and so water can be seen on the surface. This has been the case since it was sown with wheat in October 1838.

Some opponents to subsoil ploughing advance as an argument, that it will require to be often repeated. This, the length of time since Mr. Smith and others have first used the subsoil plough, is sufficient refutation; but supposing it required to be repeated every rotation of cropping, no improvement of so much importance can be made at so cheap a rate. As for example, in estimating the expense of this operation, the horses may be charged at 5s. each, to cover tear and wear, &c., which will amount to 20s. The furrow turned over being broad in proportion, four horses can accomplish a Scotch acre in ten hours, and when

* I possess the names of gentlemen in Aberdeenshire, Ayrshire, Fifeshire, Kinross-shire, Lanarkshire, Perthshire, Stirlingshire, Cheshire, Cumberland county, Lancashire, Lincolnshire, and the county of Northumberland, who have successfully practised subsoil ploughing.

it is considered that one such ploughing will save a furrow in spring, there may be deducted the cost of one such 10s., leaving 10s. to be charged against subsoil ploughing. Others whose object is to prevent the introduction of subsoil ploughing, state with apparent plausibility, that it is not gaining ground, and that many who have tried it have now their ploughs laid aside never more to be used. There may be some who have done so from want of that patience and perseverance which all improvements at first require; but the question may be put, Did those who have done so, previously drain their lands? If they did not, they acted wisely in not persisting. Others who have drained their land and found themselves equally unsuccessful, operated ignorantly, for in place of subsoil ploughing at right angles to the drains, which is the proper mode, they ploughed parallel to them, and so did harm instead of good, because the water was thereby sent in a direction opposite to that of the drains.

The opening of the subsoil in a tenacious clay on undrained land, makes one great pit for holding water over the whole field, which is a most destructive thing for cultivated plants. On this principle, experience has taught the agriculturist on tenacious clays to follow a system of shallow ploughing; but a single instance has not occurred to my observation of disappointment following subsoil ploughing performed in a proper manner.

Mr. Stirling is well known as an enterprising, persevering, and successful improver of land; and his estate shows the best results of thorough-draining and subsoil-ploughing. He is now quickly rooting out abundant crops of rushes, and substituting in their stead splendid crops of grain and luxuriant grass, on a soil, composed mostly of blue, tilly, tenacious clay, mixed with heavy stones, whose obstructions rendered his operations a very arduous undertaking; the result has been highly satisfactory, and perfectly conclusive of the benefits to be derived from these two expensive, but indispensable operations. The first field commenced with was drained every 18 feet, ploughed with the ordinary plough, and sown with oats, which were so bad, that they could scarcely be gathered together. It was afterwards subsoil-ploughed, and next season sown with turnips, which were a fair crop. In the following season, it was sown with barley and grass-seeds, and these were luxuriant crops. This year, 1838, it has produced an abundant crop of oats. Mr. Stirling has gone over an extent of 50 acres with drains from 15 to 18 feet apart, all of which have been subsoil-ploughed. He has also found it to be of great advantage to put a subsoil-plough, of small dimensions, through his turnip-crop immediately before finishing the cleaning of them.

Mr. Stirling has also the merit of inventing a muzzle or bridle for the plough that goes immediately before the subsoil-plough, by which the horses are enabled to go on the unploughed land, and obviates the injury caused by their feet trampling the furrow that has just been subsoil-ploughed. The small angle at which the horses have to draw, makes little difference in the draught, while the horse that worked in the furrow has now much firmer footing. The only difference between the bridle just noticed and the common one is, that it is 18 inches in length, and otherwise comparatively larger, and from its construction the plough is enabled to get "less land." This is the bridle I have described.

Mr. Melvin, Ratho Mains, on his farm of Bonnington, Mid Lothian, has applied the subsoil-plough extensively, and is so satisfied of the advantage arising from it, that he is prosecuting it with vigour. The results may be given in his own expressive

words,—of the 18th October 1838.—“As requested by you, I subjoin a detailed account of the effects from the use of the subsoil-plough on various descriptions of land. Having a field consisting of five acres (imperial) of light dry land, well adapted for turnip husbandry, and three acres of the same description of soil, rendered very wet from the stiff stony clay which composed the subsoil, in pasture in 1835, and oats in 1836, and after having removed off the latter crop from the ground, the damp subsoil of the field was ploughed 14 inches deep with Murray of Polmaise plough, drawn by three horses, yoked abreast; and the land being dry at the time, the trampling of the off-side horse was not injurious to the soil. The dry part of the field was ploughed fully a foot deep with the common plough; drawn with three horses abreast, which mixed an inch or two of sandy gravel with the soil. A crop of turnip was afterwards taken, followed with barley; and in both crops, the part that was subsoil-ploughed was deficient; indeed, no benefit had arisen from its use, whilst the part that was trench-ploughed, was decidedly increased in fertility.

“During the summer of 1837, a field of 22 acres, 18 of which consisted of a deep, soft, damp, soil, lying on beds of sandy clay, variously mixed with gravel, was drained in the alternate furrows, with $2\frac{1}{2}$ feet deep drains, filled 14 inches with stones, broken to pass through a three-inch ring; and, upon levelling the ridges, there were fully 18 or 20 inches of soil over the stones. The rest of the field, being naturally drier, did not appear to stand so much in need of draining, and it was accordingly not drained. The whole field was subsoil-ploughed during July, two descriptions of ploughs being used; the four-horse plough of Smith, and the three-horse plough of Murray. The greater size and weight of the four-horse plough proved most effective in raising out of the ground the land-fast stones; but the three-horse plough went equally deep, and did as much work in the same time. The depth to which both reached was fully 16 inches, breaking up at least 6 inches of the subsoil; $\frac{3}{4}$ of an imperial acre a-day was the extent of the work executed; and it cost about 12s. per acre, exclusive of the first furrow thrown out with the common plough. After sowing the land with wheat, the head-ridge furrows were cleared out as usual; but since the subsoil-ploughing, I have not seen water run, or even stand, upon the drained part of the field. Some water lodged upon the undrained part at the breaking up of the snow storm, in March 1838, but was soon all absorbed; a circumstance the more remarkable, as the water furrows, before both the operations, were very much hollowed out from the great currents of water that had run along them. A bulky crop of Talavera wheat has been secured from the field, all ready for the hook at the same time; and not, as formerly, in patches, and some parts green, after the first portion was cut. The sown grasses are abundant and healthy, although retarded in growth, from the strength of the wheat crop. Much no doubt, of the improvement in the condition of this field is to be attributed to the draining; still the quick absorption of the water in the furrows between the drains, (the land being cast), the decided improvement of the drier part, and the uniformly equal crop, sufficiently attest the merits of subsoil-ploughing.

“A field of 12 acres consisting of stiff wet soil, lying upon a cold retentive clay, had been sown with drilled beans in 1836; and upon their separation from the ground, was drained in every 27 feet, with a tile-drain $2\frac{1}{2}$ feet deep, covered with gravel; and a small stone drain, 33 inches deep, alternately, and sown with oats in 1837. After harvest, the field appeared

very little ameliorated with the drainage, the crop ripening very unequally. The whole was subsoil-ploughed to the depth of 16 inches. In the following November, a great many large stones turning up, and the subsoil being of a compact obdurate nature, each plough did not execute three quarters of an acre a-day. In April following, the condition of the land was materially altered, the rain having gradually found its way to the drains; and upon ploughing it, instead of a sour stiff furrow turning up, an open friable soil was exposed. So great, indeed, a change was effected, as to induce the planting of potatoes (no green crop having ever been seen on it before), the drills being drawn across the line of the ridges, and the natural declivity of the ground. The crop fully equalled my expectations, and the colour of the soil is changed from a grey weather-beaten hue to a rich brown. In a few of the original deep furrows, the potatoes did not succeed, from not having been sufficiently filled up; it being imperatively necessary, after land is drained and subsoil-ploughed, to have it laid perfectly flat. I have subsoil-ploughed about 30 acres since November last year, but having been fallowed during the summer, I have not seen its effect upon the crop. But, in some portions left for a comparison, the subsoil-ploughed part has always been invariably drier, the whole land having been drained.

"I have never seen any benefit from the use of the subsoil-plough upon damp-bottomed land that had not been drained:—The light dry land that was ploughed in one of the cases, did not seem very much improved either; and from the above experiments, I would be inclined only to subsoil-plough thorough-drained land having a close subsoil, as it is that only which will return a fair increase for the outlay to the tenant.

"For all stiff-bottomed land I prefer the four-horse, second-sized plough of Mr. Smith; and for lighter-bottomed land, I use the smaller three-horse plough. The work is very severe indeed, there being a greater amount of animal exertion required for one day's work of the subsoil plough than for two of the common-plough."

Mr. James Balfour, an intelligent and improving farmer on the estate of Lundin, Fife, gives his opinion of subsoil and trench ploughing, October 1838. "I think trench-ploughing requires to be done very cautiously, and only upon some descriptions of soils; in fact, it is my opinion, that it should follow furrow-draining and subsoil-ploughing, when these have been done two or three years previous, on a soil that is a little too soft and resting on a strong subsoil, in order to allow the atmospherical air to ameliorate it, and then the trench-plough should be used to mix it with the upper soil. I conceive the trench-plough a dangerous implement and injurious to a clay-soil resting on a clay-subsoil, on such land the subsoil-plough is the implement that should be used.

"I do not think trench-ploughing of much advantage to dry land, if it is or has not been over cropped, although when there is a fine deep soil and a command of manure, I believe the trench-plough may be worked with advantage; but even on this kind of soil, I would like to put the subsoil-plough through it some years before."

There are few facts to prove that the effects of trench-ploughing are beneficial when applied without the previous operation of subsoil-ploughing, but had the benefits resulting from trench-ploughing been as obvious as that of subsoil-ploughing, there can be no doubt more would have been produced. Mr. Scott, Craiglockart, a respectable farmer near Edinburgh, trench-ploughed in the winter of 1833—4,

with one common plough following the other, a field of 20 acres every two alternate ridges, and he has never observed on any of the crops the slightest difference.

Several years ago there was a sort of mania in East Lothian for trenching land with the spade, but experience soon taught the advocates of that system that draining was first necessary, from which operation more advantage has been reaped; but it is curious to observe, that although draining in that county has been carried to a great extent, yet among such an intelligent class of farmers, the invaluable discovery of subsoil-ploughing should be so little practised.

The use of the subsoil-plough has not been altogether confined to Britain; as a great many were last year sent to Ireland, from which country favourable accounts of subsoil-ploughing have been received; and as a proof of the steady increasing demand for that plough, the Messrs. Drummond of Stirling, state to me that, from January 1st 1837, to 17th October 1838, they have sold 97 Smith's subsoil-ploughs; their record of the weight of all these, stands thus.

One-fourth of the whole number	260 lb.
Do.	do.
Do.	do.
Do.	do.
	300
	350
	400

One of their implement makers has made 131 Smith's subsoil-ploughs, since the implement came first into notice. They are in the practice of sending them to order, not only to most districts of Britain, but to Sweden, Prussia, European Turkey, the West Indies, and America, while the demand is steadily increasing.

ENCOMIUM OF SOCRATES UPON AGRICULTURE.—"Agriculture," says Socrates, "is an employment the most worthy of the application of man, the most ancient and the most suitable to his nature; it is the common nurse of all persons, in every age and condition of life: it is the source of health, strength, plenty, and riches, and of a thousand sober delights and honest pleasures. It is the mistress, and school of sobriety, temperance, justice, religion, and in short of all virtues civil and military."

VEGETABLE ORIGINS.—Turnips and carrots are thought indigenal roots of France. Our cauliflowers came from Cyprus—our artichokes from Sicily—lettuce from Cos, a name corrupted into gause—shallots, or eschallots, from Ascalon. I had been reading on the subject, and was struck with the numerous ideas, on commerce and civilization, which may arise from a dinner. Will you have a dessert from memory? The cherry and filbert are from Pontus, the citron from Media, the chesnut from Castana, in Asia Minor, the peach and walnut from Persia, the plum from Syria, the pomegranate from Cyprus, the quince from Cydon, the olive and fig from Greece, as are the best apples and pears, though also found wild in France, and even here. The apricot is from Armenia.—*Horace Walpole.*

STABLE ECONOMY ;

BY JOHN STEWART,

VETERINARY SURGEON AND PROFESSOR OF
VETERINARY MEDICINE, GLASGOW.

[Upon several former occasions we have given extracts from this useful publication. We now lay before our readers some observations upon one department of the management of the horse, which, from its importance will be read with more than ordinary interest.]
—Ed. F.M.

PREPARATION FOR FAST WORK.

The natural powers of the horse, contrasted with those he acquires, are feeble beyond what a stranger can conceive. Some people are prone to talk nonsense about nature. They would have horses placed as nearly as possible in a wild state, or a state of nature, which, I suppose, means the same thing. In the open fields the horse, it is said, has pure air, a wholesome diet, and exercise, good for the limbs and the constitution. God never intended so noble an animal to suffer confinement in a dark and narrow dungeon, nor to eat the artificial food provided by man. Much more is said, but it is not worth repeating. The truth is, setting argument aside, *we must have service*, even at the hazard of producing diseases that never occur in a state of nature. Before the horse can do all, or half of all that he is capable of doing, he must be completely domesticated. In the artificial management to which he is subjected there are many errors : but instead of condemning the system by wholesale, it were wiser to rectify what is wrong. A horse, kept in a state of nature, would not last half-a-day in the hunting field ; and at stage-coaching two or three days would kill him.

Condition, Training, and Seasoning, as words, have nearly the same meaning. The first is used most in reference to hunters, but occasionally to all kinds of horses ; the second is confined almost entirely to racers ; and the third to horses employed in public conveyances, mails, stage-coaches, and so forth. They relate solely to the processes and agents by which strength, speed, and endurance are conferred ; and are limited to the means by which the horse is inured to *severe* exertion.

The objects of Training, whether for the turf, the road, or the field, are the same. They vary in degree only, not in kind. For either of these purposes the horse must have speed, strength, and endurance. This last word is not quite so expressive as I wish. It is intended to signify lasting speed ; it relates to the distance ; speed is in relation to time ; strength to the weight carried or drawn. In stables, the words *length* and *stoutness* are used for endurance. These three properties are common to all horses, but they exist in various degrees of combination. The age, breed, formation, and condition, exercise great influence upon them.* Young

horses generally have more speed than stoutness ; at, and after maturity, stoutness is in greater perfection than speed. What are termed thorough-bred horses have speed, strength, and endurance, more of each in combination than any other breed. It would require a long chapter to consider all that might be said in connection with formation ; I pass it over, only observing that large, long-striding horses generally have more speed, but less endurance, than lower compact horses. The formation has a great deal to do with strength, and therefore this property is less under the influence of training than the others are. Training does not enable the horse to carry or draw much more than he can naturally, when in good health and spirits ; but it enables him to carry a given weight farther and faster. The condition of the horse is the last circumstance I mention, as influencing his working properties. This is a matter of great importance. A horse, say a race-horse, may be of the right age, his pedigree may have no stain, and his formation no fault ; he may be in perfect health, sound in wind and limb, but notwithstanding all this, the horse may be in a very bad condition ; that is, for running a race. He may have too much carcass, he may have too much flesh about him, he may be short-winded, and his muscles may be unfit for protracted exertion. To put these into that state which experience has proved the best for a particular kind of work, forms the business of training, conditioning, seasoning. Before considering all the agents and processes employed by the trainer, I would make a few remarks upon the size of the belly, the state of the muscles, the state of the breathing, and the quantity of flesh.

Size of the belly.—Horses that are fed on bulky food, and those that are very fat, have a large belly. In one, its size is produced entirely by the contents of the intestines ; they may be laden with grass, hay, straw, or other food, of which must be eaten to furnish the required amount of nutriment, and there is always a good deal of water along with this coarse food. One dose of physic, or at the most two doses, will empty the bowels. In another case the size of the belly arises from an accumulation of fat inside. This is removable only by slow degrees. Purgation, sweating, and other evacuants, take it away. In a third case, the size of the carcass depends partly upon the intestinal contents, and partly upon the accumulation of fat.

When the belly is very large, from either or both of these causes, the horse cannot breathe freely. He cannot expand the chest, the contents of the belly offer a mechanical obstacle to the elongation of this cavity ; and, as a necessary consequence, sufficient air cannot be taken in to purify sufficient blood. But the weight of the fat, or of the food, is of itself a great burden, and would tell seriously against the horse in protracted exertion, even though it were placed on his back.

The trainer should know when the carcass is sufficiently lightened. He judges by the horse's wind. When that is equal to the work, further reduction in the size of the belly may not be necessary. Hence, for some kinds of work, it need not be so much lightened as for some others. Without inconvenience the hunter may have a larger belly than the racer, and the stage-coach

* There are some others, particularly the temper and the state of the legs.

horse larger than either. Hunters and racers should have a straight carcass, not at all protuberant, and seldom much tucked up; but it is often very difficult or impossible to put a straight carcass upon flat-sided horses.

After the carcass is sufficiently lightened, it is to be kept within the prescribed limits by avoiding idleness and bulky food. The work or exercise must be such as to prevent the re-formation of fat and the food such as to furnish the required quantity of nourishment without occupying too much room. Fast-working horses are kept on a limited allowance of fodder, and the usual allowance is further reduced on the day preceding extraordinary exertion. This precaution, however, is requisite only with great eaters, or gluttons, as they have been termed, employed at hunting or racing.

State of the Muscles.—Exertion, under certain regulations, produces a particular state of the muscles, the parts of motion, and of the nerves, the blood, and the blood-vessels, by which the muscles are supplied. Neither anatomy nor physiology is able to describe the change which those parts undergo in training. The eye, indeed, discovers a difference in the texture and the colour of the muscles. Those which have been much in use are redder, harder, and tougher, than those that have had little to do. They contain more blood, and that blood is of a more decided red colour. They are also a little larger, when compared with a corresponding muscle of less work. More than this, dissection does not reveal. It is known, without any dissection, that the instruments of motion exist in different states, that in one state their action is slow and feeble; in another state it is rapid and powerful, and that in certain states they can maintain their action for a much longer time than in certain other states.

For practical purposes it is not perhaps of much consequence to learn all the changes which the muscles, the blood, the blood-vessels, and the nerves must undergo, before the horse can possess the condition which his work demands. It may be enough to know that the condition, in whatever it may consist, can be conferred only by exertion. There are numerous auxiliaries, and various modes of giving and of regulating exertion, but until it has produced the requisite alteration in the muscles, and their appendages, there can never be any remarkable degree of speed, nor endurance.

State of the Breathing.—I have said that the horse's breathing cannot be free so long as a large belly interferes with the action of the lungs. To lighten a large carcass is to improve the wind. But I am persuaded that the lungs themselves may undergo a change particularly favourable to protracted exertion. Though I cannot offer any proof of this, I think the alterations which take place in other parts of the body make it appear probable that the lungs also are altered. It is reasonable to suppose that the tubes which carry the blood, and those which carry the air, suffer some increase of calibre; and that the lungs, taken altogether, becomes a little larger. Such an alteration seems necessary to account for the visible change which takes place in the breathing. As training proceeds, the horse becomes less and less distressed by exertion, and

ultimately acquires the power of doing that which would have killed him at the beginning; and the cause of death would have been found in the lungs. I can offer no other proof in favour of this supposition. But these matters have been so much neglected, that it does not seem to have occurred to any body that investigation is needful. Our knowledge is incomplete, yet no one speaks as if there were any thing to learn.

It is well enough known, however, that, to improve the wind, the horse must have a great deal of exertion. Purging, sweating, and other emaciating processes remove all obstruction to the lungs; exertion, at such a pace as to quicken the breathing, does the rest. But all horses do not need the same quantity of work to improve their wind. In some it is naturally very good. They have large nostrils, a wide windpipe, and a deep chest. By proper training their breathing becomes remarkably free and easy; hardly any pace or distance produces distress. They go as far and as fast as the legs can carry them. When over-worked it is generally the legs, not the lungs, that fail. There are as many other horses whose wind is bad, never very good by any management. They have small nostrils, and a small chest, neither deep nor wide. In these the wind fails before the legs; work makes the others leg-weary; these it over-marks, producing congestion, or inflammation in the lungs. These horses are never fit for long races.

However good or bad the wind may be before training, it always improves more or less as training proceeds. It is improved at the same time, and by the same means, that power is given to the muscular system. But exertion may be so regulated that the muscular system shall acquire all the energy of which it is capable, and yet the wind may be neglected and defective. Short distances give power and alacrity to the muscles, but long distances are necessary to improve the wind. The horse must go far enough and fast enough, to quicken the breathing, but not at any time so far nor so fast as to distress him very much. When the chest is defective, or when there is a strong tendency to the formation and accumulation of fat, the horse may need a great deal of exertion to render his wind fit for his work; and, in either case, he must have good legs to stand the exertion. When the legs and the chest are both defective, the horse will turn out a very ordinary animal. He will last longer at slow than at fast work.

Quantity of Flesh.—When the horse goes into preparation for work he is sometimes lean. He may have been half starved. He may be so low in flesh that he has neither ability nor inclination to make exertion. To get such a horse ready for fast-work, we must begin with feeding. He may require a little medicine, but in general it is sufficient to let him have plenty of good food, and gentle exercise, enough to keep him in health. As he takes on flesh his exercise must increase both in pace and distance. Though not given in such measure as to keep the horse very lean, it must be severe enough to prevent the formation of fat in his belly. To keep his carcass light, and his wind good, he must have an occasional gallop.

But the horse is rarely very lean when he goes into training. Most generally he is plump, fat, full

of flesh, and in high spirits. In this state he is easily injured by exertion. He has so much animation that he is willing to do more than is good for him. The very lean horse seldom has the inclination.

Hunters and racers are idle, or nearly so, for two or three months before they go into training. During this time they are so well fed, that they acquire much more flesh than they can safely carry at work. The trainer has to remove a good deal of this superfluous flesh. Why is it ever put on? I think these horses, while idle, should be fed in such a way that they may not be fat, though they may be plump and hearty by the time they go into training. But, possibly, there may be something which I have not considered that may forbid this. I would recommend a trial of one horse, or two only.

In all horses, not very lean, there are certain juices, solids and fluids, which do not contribute in any degree to produce, or to aid, muscular exertion. Most of the superfluous matter consists of fat; part lines the belly, part lies in the connexions of the intestines; some lies below the skin, and some between the muscles, and in the texture of the muscles. Horses that are never accustomed to pass a walk or a slow trot, carry a great deal of the fat in their belly; others of fast-work carry the largest portion under the skin; it covers the ribs, where it is carried with the least inconvenience. This fat is lodged in a tissue, which pervades all parts of the body, as water lodges in a sponge, only there is no apparent communication between the cells of the tissue, for the fat lies where it is placed, without sinking downwards. Fat is the surplus of nutrition. When the food is so abundant as to produce more nutriment than the system needs, the residue is stored past in the form of fat. When the food becomes unequal to the demand, the fat is re-converted into blood, or a nutritious juice equal to that derived from the food. But, as this fat cannot be rapidly converted into nutriment, certainly not while the horse is hunting or racing, it had better not be there. It is a useless weight which the horse must carry, and, from its situation, it may embarrass the parts upon which motion depends. Besides the fat, there are probably some watery or serous juices, quite as useless or injurious under exertion. In the stables, the superfluous matter, is termed *the waste and spare*, and the removal of it is termed, *drawing the horse fine*.

Slow-work horses may carry much superfluous flesh without any inconvenience. Saddle and carriage horses are not supposed to be in good condition unless they be tolerably plump. Mail horses cannot carry much, and it must all be on the outside, not in the belly; hunters carry less, and racers the least of any others. But, for short distances, it is not usual to draw the racer very fine. For a four-mile race, the horse must be drawn as fine as it is possible to make him, without exhausting him. It is obvious that the means by which superfluous flesh is removed, will also remove that which is useful, if persisted in beyond a certain point. When carried too far, the horse becomes unwilling to exert himself, dull, feeble, and careless about his food. These symptoms, accompanied by emaciation, show that he is *overtrained*. The

trainer is proceeding too fast or too far with his operations. There is no rule to guide him, but the state of the horse. One may be drawn a great deal finer than another. So long as the horse goes cheerfully to his work, and to his food, the trainer may proceed; he may stop so soon as the horse has wind and speed for the distance.

Superfluous flesh is removed partly by sweating, partly by purging, and partly by exertion. When all is taken away, that is likely to incommode the horse, further reduction hazards the legs when there is no need to hazard them.

It appears, then, that the trainer may have to lighten the carcass, he may have to put flesh on the horse, or to take it off him; and he always has to give tone to the muscles, and freedom to the wind. Each goes on progressively, and generally at the same time; but the belly is to be reduced to its proper size before all the superfluous flesh is taken away; much of this, if there be much of it, must be removed before power and alacrity can be given to the muscular system. Subsequently the horse may be drawn finer, if need be, as his wind and his speed are under improvement.

It is probable that training produces some alteration in the condition of the blood, the nerves, the blood-vessels, the joints, the tendons, and upon every part connected with motion. The change in these ought to be as permanent as that produced in the muscles; but I can say nothing more about them.

Agents of Training.—The agents and processes employed in preparing the horse for fast-work are, physic, sweating, blood-letting, diuretics, alteratives, diaphoretics, cordials, and exertion. I do not mean that all these are, or should be, in requisition for every horse, or every kind of fast work. All, however, are occasionally used, and it is proper to consider all. Without knowing what each can do, and what each cannot do, it cannot be judiciously employed. I consider their effects in reference to training; but some of them, such as physic, and cordials, are often used when the horse is already trained and in work; and to this, or a similar circumstance, I allude in two or three places. Though not strictly connected with the preparation for work, it is right, I think, to say all I have to say about one thing in one place.

Physic.—In the stable this word is entirely confined to purgative medicine.

Uses of.—To a horse going or gone into training, physic may be wanted for one or more of seven purposes. It will diminish the size of the belly; it will rectify a disordered state of the bowels, rousing them from torpor to activity; it will expel worms; it will produce real or comparative emaciation; it will cure plethora; it will prevent plethora; and it will cure swelled legs. Physic will produce other effects; but I speak of it only in reference to preparation for work, and to the preservation of working condition.

If the horse be newly from grass, one dose will be wanted to empty his bowels. It may be given on the day he is stabled. If lusty, the dose may be strong. If the horse be lean, previously half-starved, or kept on bad food, one, perhaps two doses, may be necessary to empty the bowels, expel worms, and rouse the digestive apparatus to ac-

tivity, one or all. In this case, the horse may as well be stabled for eight or ten days before his physic be given. It should be mild. If the horse be fat, lusty, or, as stablemen say, full of humours, foul, or foggy, his flesh soft and flabby, he will require a smart purgative. If he be very full of flesh, have bad legs, and be a good feeder, he may need several doses, each as strong as the horse can safely bear it. His safety is never to be compromised. There are other means of reducing him, if physic, in safe doses, will not do it. He may have the first as soon as his bowels are relaxed by bran mashes. The second is not to be given in less than nine clear days. The third, if absolutely necessary, is not to be given in less than fourteen days after the second sets.

Should the horse fall lame, or from any other cause require to lie idle for several days after his training is considerably advanced, physic may be necessary to prevent plethora. This state of the system may also be prevented by reducing the allowance of food. But racers and hunters cannot be starved, and whatever kind of food they get it must either produce plethora or a large belly. The physic prevents both. Unless lameness or swelled legs demand it, the physic need not be given till the horse has been several days idle. If he must be out of work for more than two or three weeks, a second dose may be necessary. But it is only horses of very keen appetite that need physic to prevent plethora. A delicate horse of light carcass, narrow loins, and irritable temper, rarely requires physic to prevent or to cure plethora, and very seldom to remove superfluous flesh. They eat sparingly, and the training exercises reduce them more, and faster, than others of robust constitution. Between the most delicate and the most robust there are many others with whom a middle course of treatment must be adopted with regard to physic, and to every thing else. While those of very strong constitution may require a full dose, the very delicate may require none. To some, a mild or a half dose is sufficient; and to others a diuretic or an alterative may be useful, when the propriety of giving even a mild or a half-dose is doubtful.

Horses that have undergone a good deal of exertion, whether in training or in work, often need physic to refresh them. The legs may be slightly swelled, the horse a little stiff, and dull. If much emaciated, a mild dose is sufficient; if lusty the dose may be strong, particularly if the legs be the worse of wear.

The Effects of Physic vary with the strength of the dose, the number of doses, and the condition of the horse. One dose, mild or strong, merely empties the bowels; two, three, or a greater number, of mild, perhaps only half-doses, given at proper intervals, rouse the digestive organs to more than ordinary activity, and make the lean horse acquire flesh. But if the doses be given at intervals too short, the bowels become very irritable; they remain relaxed; the evacuations are soft, too pultaceous, and a draught of cold water or a little fast work, produces actual purgation. In such a case the horse becomes excessively lean and weak, and it is often a long time ere he recovers.

He has had physic too frequently, even though each dose were mild.

One strong dose, besides evacuating the bowels, and lightening the belly, produces emaciation. The purgative drug acts first upon the inner surface of the stomach and bowels. It irritates this surface, which pours forth a copious secretion of water-like fluid, for the purpose of diluting and weakening the irritant. The fluid is derived from the blood. When the purgative is so strong as to produce very copious secretion, the loss which the blood suffers in quantity is soon felt all over the body, and an effort is quickly made to supply the place of that which has been lost. Vessels, termed absorbents, commence operation upon the fat, and upon other superfluities. These undergo a change, and require a resemblance to blood; they are collected, and poured into the blood-vessels, and fill the place of all the fluid that has been evacuated by the bowels. This absorption of superfluities follows every evacuation, whether it comes from the bowels, the skin or the kidneys; and I need not again advert to it. The horse becomes leaner in order that the blood-vessels may be fuller. The fat is converted into blood, or a fluid like blood; but when there is no fat to remove, or to spare, the absorbents act upon, and remove other superfluous fluids and solids wherever seated. Thus, purging, sweating, and other evacuants take away fatness, swelled legs, dropsies, tumours, and so forth.

Purgation always produces emaciation, more or less evident according to the violence of the operation. But when one dose succeeds another, before the bowels have quite recovered from the effects of the first, there is danger in the process. Purging proceeds too far; it may be so severe that weeks must elapse ere the horse recover; it may be such as to leave the bowels excessively irritable, easily relaxed; or it may be such as to kill the horse in two or three days. These and some other bad effects of physic, arise from either giving too much physic at one time, or from giving it too often.

In hunting and racing, and even in coaching stables, horses often die under physic. The blame seldom falls upon the medicine, nor upon the man who gives it. The fault is all in the horse's constitution; instead of saying the physic was too strong, the man declares the horse was too weak, as if it were not possible to make the physic strong or weak according to the state of the horse. When the horse dies, however, it is always from an overdose. He gets too much at once or he gets it too often, or that which he gets is made to work too strongly, for it is possible to make a small dose produce great effect.

In the stables it is often asserted that physic is dangerous when it does not purge the horse. When not strong enough to purge the horse, the groom says it goes through the body, does not work off, but requires another, to make it work off. This is nonsense. I must have given several thousand half-doses of physic, not intended to produce any purgation, or very little. If any one of these ever did any ill, a full dose would have done a great deal more. But when the groom finds his first dose does not purge any, or not so much as he desires, he is in a hurry to give a second, which,

operating with the first, is a pretty sure way to destroy the horse. If one dose do not purge, no second should be given till after four clear days.

Physic in full dose, always produces temporary debility, even before purgation begins. It increases as the purging proceeds, and its duration is influenced by many circumstances. The horse is dull, sick, and sometimes a little uneasy while he is purging. He is generally sick before it begins, and while it lasts, but very often he becomes lively and desires food so soon as purgation is established.

After severe purgation the horse is weak for several days; he sweats soon and is easily fatigued. Some recover much sooner than others. To the temporary debility there often succeeds an immediate increase of energy, greater than the horse possessed before, and not altogether dependent upon the loss of superfluous flesh, nor the removal of any apparent evil. Hence physic is frequently given to racers, and to hunters, in the middle of their working season, for the purpose, as it is termed, of *refreshing* them.

A Course of Physic consists of three doses, given at intervals from 8 to 14 days. Hunters, racers, some carriage, and other horses, get two courses every year as regularly as the seasons come round; the racer in autumn, after his summer running is over, and in spring, after he has lain idle all winter; the hunter in spring when he goes to grass or loose-house, and in autumn when in preparation for his winter's work. Carriage, and such like horses, have their two courses, simply because spring and autumn, are spring and autumn. This, in reference to ordinary horses, is going much out of fashion. A few venerable adherents of the old school still remain, but their example is not very pernicious; it is little followed.

There is no season in the year at which physic is more necessary than at another. Horses, indeed, are moulting in spring and in autumn; but so long as they are in health this process is not beneficially influenced by physic. With hunters, the change of food and work alters the case. They may need one dose, or three, or more than three, or none. The practice of giving a full course to all, without discrimination, as if there was some magical property in the number three, is too absurd to merit notice. Physic is not one of those simples in which quackery deals. Its power to do evil, is at least as great as its power to do good.

Composition of Physic.—There are many articles which purge the horse; but, upon almost every occasion, Barbadoes aloes is preferred. It is easily given, and the proper dose is well known, or easily regulated. It purges with more certainty, and with less danger, than any of the articles which are sometimes used in its place. The aloes are powdered, and formed into a tough, solid mass, soft enough to swallow. Common, or Castile, soap is generally used for this purpose. One of soap, to two of aloes, is about the proportion. Other ingredients are sometimes added; but, to produce purgation, nothing is wanted but the aloes. On hunting and racing establishments the head groom usually compounds the physic himself. It may be procured ready made, in any strength, from the veterinarian or the druggist. A full dose varies from four drachms to nine. Yearling colts require

about 4; ponies from 5 to 6; saddle, hunting, and draught horses from 7 to 8; thoroughbreds from 6 to 9. These last when well prepared may be purged by six drachms; but when in work they may require nine. Horses of narrow chest and light carcass, require less than those of round barrel.

Giving a Ball.—A dose of medicine, whether purgative, cordial, diuretic, or any other kind, when given in a solid form, is termed a *ball*. It should be soft and about the size and shape of a pullet's egg. The operator stands before the horse, who is generally unbound, and turned with his head out of the stall, and a halter upon it. An assistant stands on the left side, to steady the horse's head, and keep it from rising out of the operator's reach. Sometimes he holds the mouth open, and grooms generally need such aid. The operator seizes the horse's tongue in his left hand, draws it a little out, and to one side, and places his little finger fast upon the under jaw; with the right hand he carries the ball smartly along the roof of the mouth, and leaves it at the root of the tongue. The mouth is closed and the head held, till the ball is seen descending the gullet on the left side. When loath to swallow, a little water may be offered, and it will carry the ball before it.

Some grooms are sad bunglers at this operation. Some cannot do it at all; many not without the use of the balling iron, and none of them can do it handsomely by any means. I have seen the tongue severely injured, half torn out of the horse's mouth; and many horses are so much alarmed and injured by a bad operator that they become exceedingly troublesome and always shy about having the mouth or head handled.

By keeping the little finger upon the bar of the mouth, the tongue can never be injured; the hand follows every motion of the head without being dragged by the tongue. By delivering the ball smartly, and without instruments, no pain is produced, and no resistance offered. A hot, troublesome horse should be sent to the veterinary surgeon. The probability is that the groom will fail; he may lodge the ball among the teeth, or injure the mouth, and the horse will be pained to no purpose, and taught to resist all operations about his head.

Preparing for Physic.—If a full dose of physic be given when the bowels are costive, it is apt to produce colic and inflammation. The medicine is dissolved in the stomach, passes into the intestines, and mingles with their fluid and semifluid contents; but, as it travels on, it arrives at a point where the contents are solid; the physic is arrested; it lies longer there than at any previous part of its course; its continued presence produces spasmodic and painful contractions of the bowels to force it on. If the intestinal contents be very obstinate, if the obstruction be not dissolved, irritation and inflammation succeed, and the horse's life is in danger. To obviate this, the bowels for one or two days previous are to be gently and uniformly relaxed by giving bran mashes, by withholding corn, and by stinting the allowance of hay. If the horse can take exercise, one day is sufficient to prepare him. At the usual feeding hour he has a bran mash, warm or cold, whichever he likes best. He gets water often and

in full measure, as much as he will take, and if possible, he should have walking or trotting exercise, perhaps morning and afternoon. At night he receives less than the ordinary allowance of hay; and if a great eater, a muzzle is put upon him, that he may not eat the litter after his hay is finished. Few however, need to be stinted in their fodder. Most of them may have the ordinary allowance. Those that will not eat mashes, nor drink freely, and those that cannot take exercise, are the only horses that need to be kept short of fodder. Early next morning the physic is given on an empty stomach.

Treatment under Physic.—Half an hour, or directly after the physic is given, the horse gets a bran mash; that eaten he goes to walking exercise for perhaps an hour; he is watered when he returns. The water should be tepid, warm as the horse will take it. He is to get it often and as much as he pleases. It should all be warm, that is, it should not be very cold. Some horses, particularly when under physic, refuse tepid water. It is often offered too warm. It is better that he have it cold than that he have none. But from the time physic is given till it ceases to operate, all the water should be warm as the horse will take it, yet not so warm as to make him refuse it. During the remainder of this day, the horse has a bran mash as often as he is accustomed to get corn. Warm are better than cold mashes; if refused, they may be given cold; if both be refused, dry bran may be tried. Whether bran be eaten or refused, the horse is to have no corn. The hay may be sprinkled with plain or with salt water. Sometimes a little more exercise is given in the afternoon; and when the horse is difficult to purge he is all the better of more exercise, weather and the legs permitting it. In wet weather the horse is not to go out. In cold whether he is to be clothed, both in the stable and at exercise. The exercise is given at a walking pace, but in cold weather part of it may be faster. It should be fast enough to keep the horse warm, but not so fast as to heat him. Next morning about twenty-four hours after the physic has been given, purging commences. Sometimes it begins sooner. I have seen physic operate in ten hours, and I have known thirty hours elapse ere the horse was fairly purged. The more exercise he takes, and the more water he drinks, the sooner he is purged. When the dose is strong, exercise must be given with more caution than when it is weak. But too much exercise, particularly beyond a walk, will make even a weak dose over-purge the horse.

If not purging freely next morning, when the stable is opened, the horse may go out and remain for an hour at a walk, with an occasional slow trot. Whenever purgation is fairly established the horse should be brought in, and stand in the stable till his physic *sets*, that is, till it ceases to operate. Some continue the exercise for a good while after the horse is purging; and when very copious purgation is wanted, or when the dose is not very strong, this may be done, the danger of carrying the process beyond the horse's strength being always remembered. A full dose, with proper preparation, and proper treatment usually continues to operate pretty smartly for twelve hours.

All this time the horse get bran mashes and water as on the preceding day. At night the evacuations should be less fluid, and by next morning they ought to be quite natural. After this the horse returns to his usual diet.

Colic.—If the horse appear in pain, pawing the ground, looking at his flank, rising and lying, or rolling when down, he may have a clyster of warm soapy water, and go to exercise. This sometimes happens before purgation begins. If the pain be very severe, producing perspiration, a cordial ball may be given, and more clysters, and exercise, only a walk.

Superpurgation occurs frequently, either from the dose being too strong, or the horse getting too much exercise. If the physic continue to operate so as to threaten evil, it may be stopped very readily by giving the horse a few oats or beans, one or both. If the horse will not eat give him a cordial ball; withhold water, and give oatmeal gruel instead; bandage the legs, clothe the body, give a good bed, shut up the stable, and do not take the horse out. In half an hour after giving the cordial again try the horse with oats or beans. Should these means fail, or should the horse very rapidly become weak, dejected, losing flesh from the back, crest and thighs, let him have half a pint of mulled port wine, well spiced in as much warm water, and add an ounce of laudanum to it. Repeat this dose every four or five hours till purging stops. It will always succeed if the horse be not indeed at death's door before the treatment is begun. Bleeding in such a case destroys the horse.

Sweating.—Every horse must perspire more or less while undergoing preparation for fast work; but in all racing and hunting studs there are some horses that require to be purposely sweated. By putting the horse to exertion, under heavy clothing the perspiration is excited, and encouraged to flow, in much greater profusion than mere exertion would ever produce. The object of this is twofold. Sweating removes superfluous flesh, and it gives freedom of respiration. The one object may be aimed at more than the other; and the process of sweating is, or ought to be, regulated accordingly. If the main object be to remove superfluous flesh, the horse may be sweated without, or with very little exertion; if the main object be to improve the wind, the horse must have a good deal of exertion with less sweating. In both cases the horse is drawn finer. The fluid which escapes from the skin is derived from the blood. Copious perspiration is soon followed by absorption. The superfluous fluids and solids are carried into the circulation, in order to supply the deficiency which perspiration has produced. Every sweat, if it be carried far enough, draws the horse finer, and such is the result whether he get much or little exertion.

I have never met with a stableman who seemed to understand the precise effects of sweating. They confound the effects of exertion with those of sweating; they proceed as if they thought the two should be combined. I have more than once stated that exercise, judiciously managed, gives power and alacrity to the muscular system, and freedom to the breathing. I have now to observe that sweating, considered by itself, *does neither*.

Copious perspiration can be excited with very little exertion; and, when that is done the sweating merely removes superfluous flesh. It removes fat, and other matters, which encumber the muscles and the lungs; but it does not improve the functional powers of either. Exertion produces one series of effects, sweating another; and though both are generally combined, there are cases in which they may with advantage be separated.

Sweating without Exertion.—There is some exertion, but so little that it is not worth considering. The horse is heavily clothed, saddled, mounted, and taken to the sweating ground; here he is ridden at a steady, gentle pace, till he begins to perspire; so soon as the coat is damp, he is ridden at a smart pace to the stable; the doors and windows are closed; the horse is stalled with his head out, the saddle is removed and more clothing applied. The groom stands by, while an assistant holds the horse's head. In a few minutes, from eight to ten, the skin becomes quite wet, perspiration issues from every pore, and runs down the legs. The horse's breathing increases, and is often as quick and laborious as if it had just run a race. This arises partly from heat and partly from exhaustion. The sudden loss of so much fluid produces a faintness very similar to that which follows a large bleeding; and without doubt the effect is greater from the heat accumulated on the surface. The time the horse is permitted to sweat in this manner must be regulated by the groom. It had better be repeated in a few days than overdone at first. After the first sweat the groom will closely observe its effect, and he will carry the next further or not so far, according to circumstances. With some the sweating need not stop till the perspiration be dropping fast from the belly, running down the legs and passing over the hoofs; with some others, upon whom its effects may not yet be known, it will be time to stop when the hair is completely soaked. The groom now and then puts his hand under the clothes, and passing it along observes how much fluid be lodged in the hair. If the horse be sufficiently warm when he enters the stable, he may have to sweat from five to fifteen minutes. Few require more than fifteen, and few less than five.

The sweating having been carried to the desired extent, the horse is stripped, the stable boys, usually one, and sometimes two on each side, immediately scrape the horse all over; they make the skin dry with as much expedition as possible. After scraping the neck, sides, quarters, every place upon which the scraper will operate, the legs and head are sponged. By means of wisps and rubbers the horse is made quite dry; his standing clothes are put on; he gets a quart or two of tepid water, goes out and gets a short gallop; is walked about till quite cool; when he is stabled, dressed, clothed, watered, fed and left to repose. The first water is tepid, and no more is given than sufficient to make the horse eat. The first food requires to be rather laxative, particularly for round-barrelled horses. The sweating produces costiveness, which is obviated by a bran mash; corn is given afterwards.

If it be desirable that this sweating produce a very decided effect in reducing the horse, his al-

lowance of water for the next twenty-four or thirty-six hours should be moderate. He will be disposed to drink very copiously, but if much be given it will be rapidly absorbed, and will in some measure, fill the place of that fluid which perspiration has taken away, and there will be less stimulus for the absorbents to act upon the fat and other superfluities. The water should be tepid, for when cold it increases the horse's desire for it, and enough to make him feed is sufficient.

It is usual to give the horse a short gallop after his sweating; and after he has been dried, when he is able to take the exertion and to suffer so much exhaustion in one day, the practice is unobjectionable: but sweating, with or without exertion, does not render a gallop immediately afterwards at all necessary. Some gentle exercise, however, is often necessary to prevent perspiration from breaking out after the horse is dressed.

I think this mode of sweating without exertion is the best for lusty horses with defective legs. It is most necessary at the commencement of training, and may be practised two or three days after the first dose of physic sets. It removes so much of the fat that the horse may afterwards proceed to exertion which would have endangered his legs, had it been given before the sweating. This sweating merely removes fat. It confers no energy upon the muscles, nor capacity upon the lungs, beyond that they acquire from having greater freedom of action. This kind of sweating is never necessary for horses already low in flesh; and it need never be repeated while the legs can safely carry the body.

Sweating with Exertion.—It is only that in racing and in hunting stables that horses are put through this process. When the training-groom speaks of sweating, he means sweating with exertion. The horse is put through his physic, and prepared for sweating by several days or weeks of walking exercise, varied by an occasional gallop. If the sweating and exertion must go together, it is very necessary to prepare the horse for the process by some gentle exertion, for it is a very severe one. If the horse be very lusty, he goes daily to walking exercise. After a time he is put to a short gallop, varying in speed and distance according to his age. It should at the first two or three trials, not exceed half the distance he is to go in his sweat: if he suffer that without distress, it is gradually lengthened till he is able to go nearly, or quite as far as the sweating distance. If the trial gallop distress him, he returns for a few days to gentler exercise, and the pace and distance are increased more gradually.

Great eaters are muzzled for eight or ten hours before they go to the sweating ground; some require to be muzzled twelve hours, some six, some not at all; the stomach should not be loaded. In the morning, or when the weather is cold, in the forenoon, the horse is clothed in his sweaters, the quantity varying according to the effect desired. A soft, porous blanket lies next the skin; a breast-piece covers the bosom, while the head and neck are enveloped in a hood. Over the blanket one or two, it may be three or four, quarter-pieces are thrown; and perhaps another hood may be required, the undermost wanting the earlets. These

are tied and buckled, with care that no part encumber the action, nor abrade the skin. The legs, the eyes, and windpipe must be clear; the breast-piece must not be drawn so tight as to confine the legs or press upon the windpipe. The saddle goes over all. The horse is ridden to some convenient ground, hunters to the field, racers to the course. If the horse's legs be defective, he is mounted by a light weight; sometimes he is led by a man on another horse. In the first or second sweat it may be proper to forbear riding; but in general it is not a good practice to lead the horse. He is so little under control that he is very apt to be lamed. Arrived at the sweating ground, the horse is usually walked round it, just to let him know it, and to give him the use of his legs. The pace increases from a walk to a trot or canter, and from that to a gallop. The length and speed of the gallop must be regulated by the training groom. Speaking generally, the horse should rarely go at full speed, and not above a few hundred yards at a time. When a certain distance is not aimed at, the gallop should often end as soon as perspiration is fully established, and in no case should the horse proceed at the same pace after he appears the least distressed. As he improves in condition he goes faster and further before perspiration appears.

In racing stables the sweats, almost from the beginning, are of a certain length. According to Darvill, "the length for a year-old is two miles; for a two-year-old, two miles and a half; for a three-year-old, three miles, or three and a-half; and for a four-year-old, four miles. In preparing for a four-mile race the horse may have to sweat four and a-half or five miles."*

Though the colt or horse may have to go a certain distance, yet the pace at which he goes must vary with his condition. At first the lusty horse especially should go very slow; and when the body is loaded and the legs weak, I think the full length should not be tried at first, even though the pace be slow. For hunters the pace and the distance must be limited by the state of the legs, and the freedom of the breathing. Excess at the beginning may possibly shorten the time of preparation, but it is much more likely to injure the lungs or the legs.

When pulled up the horse is walked to his stable. He may stand for a minute to recover his wind. If the sweating ground be at a considerable distance, the horse is followed there by the groom and his assistants, who dry him in the field. The horse is placed in a sheltered spot, perhaps besides a hedge; his clothes are removed and he is scraped as dry as possible; fresh clothing is put on and the horse ridden smartly home. Subsequently the treatment is the same as after sweating in the stable. If the stable be near the sweating ground, the horse had better go there at once. He is in less danger of catching cold.

I need hardly repeat that this process has a double effect; it improves the condition of those parts upon which muscular exertion depends, and it removes superfluous flesh. How far it is proper

to aim at both objects by the same process, I leave to the consideration of those who have experience in the practical details of training. I should think it would be safer for the legs of a lusty horse to get rid of great part of the superfluous flesh with as little exertion as possible; to reduce him in the first place by purging and sweating, leaving no more superfluous flesh upon him than what exertion without clothing would remove. Sometimes the trainer unites both modes of sweating. After sending the horse his sweating distance, further perspiration is encouraged in the stable.

The repetition of these sweats must be regulated by the effect produced, and by the effect desired. While the robust glutton may require a sweat once a-week, or thrice a fortnight, the delicate abstinent may not need more than one in five or six weeks, or perhaps none at all.

Bleeding as an operation preparatory to work, is hardly ever necessary. It is customary, however in some hunting and in coaching studs upon taking the horse from grass. I believe it is nowhere so common as it used to be. It takes the flesh off a horse very rapidly, but it produces great debility. Perhaps the parts which are absorbed after blood-letting may not be the same parts that sweating and purging remove. It may be that the loss of pure blood may be replaced by the absorption of solids and fluids more necessary to vigour than those solids and fluids of which purging and sweating produce the removal.

Diuretics are those medicines which increase the flow of urine. They are not of much avail in training. They are useful, however, when there is reason to fear plethora, or when the legs swell, either from rest or from excess of food or excess of work. Nitre, resin, turpentine, soap, and oil of juniper are all diuretics. For a horse of fifteen or sixteen hands high a diuretic ball may be composed of—nitre, four drachms; resin, three drachms; and oil of juniper, twenty drops; with soft soap sufficient to make a ball of the proper size. From four to eight drachms of nitre, given in a mash, may be sufficient to prevent the plethora which idleness on a working-day might produce, and it is useful when work has excited a little fever, or swelled the legs. No diuretic is to be given within forty-eight hours after, nor before profuse sweating.

Alteratives.—In the stable this term is not applied to any particular drug or prescription. Almost every groom has a recipe of his own, and the effect, when any is produced, must vary according to the articles employed. Taken as a class, the alteratives used in training may be regarded as gentle evacuants, acting upon the secretions of the skin, the bowels, and the kidneys. Nitre, resin, sulphur, balsam of sulphur, Ethiop's mineral, cream of tartar, black antimony, tartar-emetic, calomel, cinrabar, with a host of gums, spices, and herbs, are used individually, or in various combinations. Many inert articles are employed. Very often so little is given, that neither good nor ill follows, and sometimes a dangerous and fatal dose is given through ignorance of its powers.

In former times it seemed to be a rule that the horse should swallow a certain quantity of medi-

* Darvill on the English Race Horse. Vol. II. p. 270.

cine every year, whether well or ill, poor or fat; and among grooms who pretend to much knowledge, and have a great deal of ignorance, it is still a custom to force drugs upon him, not so much to cure as to prevent. If any evil be threatened or in existence, it is very right to take measures to prevent or cure it; but the people I speak of give drugs without seeing any sign that they are wanted. The horse may be as well as they desire him to be, and not exposed to any change of circumstance or treatment that can make him worse, and yet they give some stuffs which they call alteratives.

In training good grooms do not employ means of this kind without some reason. The horse may not be altogether right, his bowels or his skin may be out of order, his legs liable to swell after work, or frogs to get thrushy in the house. The horse may have a bad appetite, or his appetite may be too good. For these and such like matters some medicine which will gently stimulate the secretions of a particular organ may be very useful. An alterative powder in very common use is composed of antimony, nitre, and sulphur, mixed and given in the same doses, and with the precautions, which are mentioned in connexion with grooming, to produce a fine coat. When the skin is rigid, the hair dry,—when there are any pimples or itchiness upon it,—when there is any tendency to swelled legs or thrushes,—a few of these powders may be given with benefit, a stronger remedy, such as sweating or purging, being unnecessary or impracticable. When a bad day keeps a hearty eater off his exercise, one or two of them will prevent repletion.

Sometimes the antimony is given alone. Nimrod recommends an ounce every day, for eight days together. The horse should not hunt nor race till a week after the last dose.

Cordials.—These medicines are seldom wanted in training. Their principal use is to give the horse an appetite. There are many spare feeders among fast-working horses. They are apt to refuse their food every time they are excited or exhausted by more than usual work. To such, a cordial is now and then of some service. There is no need for the costly and complicated preparations which are sometimes given.

Take of carraway seeds,	3 oz.
Anise seeds, ...	3 oz.
Allspice, ...	3 oz.
Cloves, ...	2 oz.
Gentian root, ...	4 oz.

These should all be ground to a fine powder, and beaten into a solid mass with treacle or honey. Divide the whole into twelve balls. One may be given at any time when there is no fever. When the eye and nostrils are red, the mouth and skin hot, they are forbidden.

Muscular exertion.—A good deal has been said about exertion in other parts of this work, and it is not necessary to say much here. In preparing for fast work the rule is to proceed from less to more, from a short to a longer distance, from a slow to a faster pace, always by small degrees. In the first week most of the exercise may be given at a walk. This pace has been objected to by Nimrod. He says it injures the legs, and produces spavin. He is in error. There

is no pace at which the legs are so safe. When the horse is kept at it for several successive hours, he may be fatigued; but the fatigue falls upon the muscles, not upon the joints nor the tendons. The horse may lie a great deal after much walking exercise, but it rarely makes him lame. Cart-horses often travel ten hours a day, for months together; and though all their work is performed at a walk, they have no spavin till they are overburdened, and not often then.

Walking exercise empties the bowels,—gives the horse good use of his limbs,—gives him an appetite for food,—promotes the secretions of the lungs, the skin, and the bowels,—and when much is given under a good rider, it teaches the horse to walk quickly and gracefully. Even at the beginning, however, all the exercise need not be given at a walk. The horse, whatever be his condition, is always able to take some faster exertion. The walk, the trot, the canter, and the gallop may alternate one with another, no more of either being exacted than the horse can bear without injury. But when intended to perform his work at any particular pace, at cantering for example, he is to get as much of that as it is safe to give him. A lady's horse would be ill prepared if most of his exertion were a trot. The preparatory exertions should resemble the work as soon and as far as it is safe to give it.

The slow paces make the horse leg-weary. If he lie more than six hours out of the twenty-four, legs being sound, he is getting too much exercise. Fast paces endanger the lungs of an untrained horse. The rider should know when he has gone as far and as fast as it is safe to go. Existing distress is indicated by signs which do not require much experience to recognise them. They are described in connexion with the accidents of work. The signs which indicate the approach of distress are not so well marked, but they are quite visible. The first is rapid and short respiration; the second frequent protrusion of the muzzle, as if the horse wanted more rein; and the third a deep, prolonged, inspiration, something like a sigh, in which the rider feels his legs thrown apart by the expansion of the horse's chest. Quickness of respiration is a necessary consequence of exertion, and is a symptom of distress only when excessively rapid and short. The protrusion of the muzzle shows that the horse is at nearly all he can do. This is not to be mistaken for the pull of a horse eager to get away; he quickens his pace as he gets his head free. When distress is coming the head is often darted downward or forward; and though more rein be given, the head still dives but the horse goes no faster. He need not in all cases be pulled up for this; it may be sufficient to slacken the pace for a few hundred yards, to go slower, until he recover a little. The deep sigh demands immediate relief; to continue longer at the same pace, even for no more than two hundred yards, is attended with considerable risk. The horse may be fairly overmarked. He may proceed a short distance, but he ought to be held in if possible, or he ought to stand quite still, which is the safer plan, until he recover his wind. At work circumstances may demand a continuation of the pace, notwithstanding this sign of distress; but

in training the deep inspiration should stop it at once.

The severest exertion given to the horse in training is that termed sweating. A certain distance is aimed at, but the groom generally knows pretty well how the horse will bear it before he is sent to it. He is previously tried in short gallops, which are lengthened by degrees. Horses usually snort after performing a little smart work; they clear the nostrils by a sudden and forcible expiration. This act does not resemble sneezing nor coughing. The nostrils play to and fro as the air is expelled, and make a peculiar noise, which is well enough expressed by the term *snorting*. It is quite voluntary; sneezing and coughing are not. Many horses do it when starting, but the groom attends to it particularly after a trial gallop. Should the horse clear his nose almost the instant he is pulled up, he has wind enough to go further and faster in his next gallop; should a minute elapse ere he snorts, still the pace and distance may be increased but not much. In the next trial should the horse stand for two minutes without snorting, his gallop has been severe enough for his condition, and it may have been too much so. He does not snort till his breathing is easy; and the more he is unwinded the more time he takes to recover. It seems however, that some horses do not snort as soon as they recover freedom of breathing. I have watched one for half an hour, after a severe run, without noticing him clear the nostrils; and I have repeatedly observed that, especially after a long-continued exertion, the horse does not snort for a good while after his breathing is quite tranquil.

The ground upon which exertion is given is a matter of some consequence. A hard stony surface injures the feet and legs, and a fall upon it is a serious affair. Deep ground, that in which the foot sinks, demands great exertion to get through it, and it hazards the legs, though the rider may have judgment enough to save the lungs. Rough, irregular ground gives the legs so many twists, that a fast pace is very apt to produce a sprain. The best is that which resembles a race course—soft, yet firm.

The kind and degree of exertion must vary with the condition of the horse; the mode of giving it must vary a little according to his disposition. A lazy horse is generally robust, and not much disposed to over-exert himself; he may require a good deal of urging to keep him at the pace, and make him go the distance. He is apt to stop when not inclined to run. If allowed to have his own way a few times at the beginning, it becomes a difficult process to train him, and still more difficult to work him. On the course he may choose to lose a race, and in the field he may fancy he has done enough before he has well begun. A horse of this kind requires to be well mounted. In his training exertion he must be ridden by one who has strength to manage him, and judgment enough to distinguish between laziness and distress. There are many other horses quite different from this kind. They are timid, easily agitated, easily injured, and very apt to over-exert themselves. The least harsh treatment alarms them; they tremble, the limbs totter, the stride is irregular, unsteady; the horse is so precipitate in his movements that he

is often lamed or thrown down: Without whip or spur such a horse would run till he died. Even a little extra exertion puts him off his feed. These horses are generally less robust than those of phlegmatic temperament; they should seldom carry much weight, yet a thoughtless boy is almost sure to abuse such a horse. He ought to be treated with great gentleness. Some are least alarmed when ridden alone, others when they have companions, which, however, ought not to be sluggards, for a timid horse is in terror when he sees or hears another punished. In general, severe exertion should not always be given on the same ground. After once or twice the horses get alarmed whenever they arrive there, and know what is coming. But the same place may be used for both the severe and the gentle exertion; and by stealing slowly away at first, the horse may do his work before he knows that he has begun it. The warning of severe exertion gives him more alarm than the exertion itself.

Indeed all horses should start slowly. A gentle pace prepares the legs, and puts every organ in order for a severer task. It gives the horse time to empty his bowels, and to see the ground, and enables the rider to feel lameness, should there be any not previously observed.

ON THE PROGRESS OF IMPROVEMENT IN AGRICULTURE.

It cannot fail to be gratifying to all those who take an interest in agriculture to observe, the spirit of improvement which is almost every where manifesting itself in reference to this most important occupation. Whether in the *New* world as it is called, or in the *Old* one, the mother country, or in her colonies, the importance of adopting means for securing a supply of the necessaries of life, seem at length to have attracted attention. It is a very common place but at the same time a very just remark, that, "necessity is the mother of invention." Necessity rouses the faculties and calls forth energies which otherwise might have remained dormant and useless. We are not without the hope that the agitation of the question of the corn laws in this country, will give an increased stimulus to the cultivators of the soil, and induce them to merit a continuation of that protection which they enjoy, by using every exertion to produce an ample supply of grain of home growth. No man at all acquainted with the subject can doubt for an instant the capability of our soil to produce a sufficiency of grain to meet the demands of the population, if only proper means be taken to call into action the powers of production which the soil possesses. We some time since called attention to the exertions which were making in the United States of America to effect improvement in agriculture. Necessity roused attention to a subject which had heretofore been left to chance. The extraordinary circumstance of a country essentially agricultural being compelled to have recourse to Europe for a supply of food for the population, awoke the government from its slumber, and the most ener-

getic means are now being taken to guard against an evil of such magnitude as a recourse to other countries for the necessities of life. The following extract from the message of the Governor to the Legislature of the State of New York, delivered on the 1st January last, whilst it pronounces a just eulogium upon agriculture, gives a true picture of the neglect which it has ever experienced from governments.

"The science which involves the physical laws most open to our investigation, and to which the primeval law of our existence compels us, and the art which precedes all other inventions, and whose cultivation leads to plenty, and is cheered by health and contentment, are the last which receive the patronage of philosophy or attain the favour of government. Mankind learned the distances and laws of planets, and even the periods of comets, before they conceived the mysteries of vegetation; and the fine arts were perfect in ages when agriculture loaded with the superstition of centuries was consigned to slaves. That this should have been the experience of other ages and other countries is easily explained. The powers of government have always been vested in classes or individuals farthest removed from the tillers of the soil; and ambition and pride have sought gratification in conquest and in the homage of the fine arts. But it must not, it cannot be so here, where the agricultural interest is sovereign, and as it furnishes all the means, rightfully supplies the motives, and directs the action of the government.

Every acre of cultivated land could be made to yield, with the expence now bestowed upon it, products exceeding by one-third in quantity and value its present fruits. The diffusion among the cultivators of the earth of the science belonging to their art would enlighten their minds, enlarge their views, elevate their motives, and refine their sentiments. Let it be well remembered that all this is necessary if we would not see the power residing with them steal away, as has always before been the case, to other classes whose pursuits secure intellectual cultivation and superior wealth. Agriculture appeals to us as republicans, therefore, with peculiar earnestness, not only by our desire to increase the public wealth, enlarge the public intelligence, and elevate the standard of public virtue, but as we would preserve the ascendancy of that policy of peace and improvement identified with the existence of Democratic institutions.

Among the plans of improvements which have been suggested is the formation of a Board of Agriculture. I respectfully commend it to your favourable attention. Such a Board might be usefully employed in introducing new species and varieties of productions, and improvements in implements of husbandry, and in carrying on a general correspondence with a view to promote the interests of agriculture.

I submit, also, whether it would not be well to require that a popular treatise upon agriculture should be contained in the district school libraries, and whether legislative sanction and patronage could not be so extended as to encourage the organization of agricultural societies, free from the defects which have hitherto proved fatal to their permanency and success."

As an instance of awaking sense to the importance of the subject, the above extract will be read with interest, but there is another point in the same hemisphere to which we must necessarily turn with an increased degree of feeling and interest, the Canada's. Our attention has been more particularly directed to that quarter, from having now before us two numbers of the "Canadian Quarterly Agricultural and Industrial Magazine." It is the work of our esteemed correspondent, Wm. Evans, Secretary of the Agricultural Society at Montreal, and already well known as the author of a valuable "Treatise on the state of Agriculture in Canada." His zeal in seeking to promote

improvements in the agriculture of his country is as unquenchable as his exertions are indefatigable. The publication of the third number of his journal was impeded by the unfortunate troubles which existed in that country, but we look forward with satisfaction to its promised appearance early this spring. The first number of the Canadian Agricultural Journal, contains an "introductory address to the farmers of Upper and Lower Canada," breathing an excellent spirit, and so far as we are enabled to judge of the question, taking a sound view of the position of parties. Our attention is however much more agreeably engaged by the second article on the "present state of agriculture in the Canadas," and in which the writer seeks to rouse the Canadian farmers to increased exertion, in language which would not be inappropriately applied to ourselves. He says—

"It is an opinion generally entertained, that men can do as they please with what is their own; and by this argument, that a farmer would be justified, if he chooses to cultivate his farm in the most imperfect and slovenly manner, allow useless and hurtful weeds to occupy the place of useful plants, to the great injury, not only of himself, but of his neighbours. It was the opinion of many great men that, on the contrary, it is our duty to extract as much useful produce out of our estates as they are capable of yielding, and that it is *sinful* in us to neglect doing so. The latter opinion is certainly the most rational, and it would greatly increase the means of human happiness in Canada, were every occupier of land in it to conform to this rule, and augment the produce of his lands, to the utmost possible amount that it could be brought to, by a judicious application of labour and good management.

"Any competent farmer who is generally acquainted with the agriculture of the Canadas, must be convinced that the annual produce of the country might be increased to *double* what it is, at an expenditure that would leave ample profit to the farmer."

LIVERPOOL AGRICULTURAL SOCIETY'S PLOUGHING MATCH.

The fifth annual ploughing match of this Society took place on the 26th Feb., in a field belonging to Hervey Aston, Esq., at Aston, near Preston Brook, in this county. Notwithstanding the attraction of the great steeple chase at Liverpool, the attendance was very great, we should think that not less than 3,000 persons were present. The field selected for the purpose was a sandy loam, of thirty acres, eleven of which was in grass. This part of the field was divided in *three lengths*, and two *butts* (as they are commonly termed) were allotted to each competitor. The contest commenced precisely at half-past nine.

The number of competitors were twenty-one, thirteen Cheshire and eight Lancashire. Quantity ploughed by each competitor 1r. 1p. statute measure.

	hr.	min.
Time occupied by the swiftest.....	1	26
Do. by the slowest.....	2	52
Average of the whole.....	2	19
Average width of furrow.....	8	inch.
Average depth.....	5	

Of the twenty-one ploughs sixteen were iron; eleven were drawn by two horses, yoked *double* (abreast), and without drivers; ten by two horses, yoked *single* (one before another), and with drivers.

The Judges were three Lancashire farmers, viz.—Mr. Wm. Longton, Rainhill; Mr. Richard Baxter, Sutton, near St. Helen's; Mr. Wm. Boyes, Speke.

These gentlemen were not allowed to enter the field

until the ploughing was all over, and the public cleared out. Their decision was made by reference to *numbers* only, which with the time occupied by each, and the method of ploughing, whether *single* or *double*, was all the information given them.

THE AWARD WAS AS FOLLOWS:—

PRIZES.	OWNERS.	£ s.	PLOUGHMEN.	£ s. d.
1 ..	El. of Derby, Knowsley	4 10	.. Jas. Macready..	1 0 0
2 ..	Mr. J. Worrall, Preston Brook	3 0	.. Thos. Worrall..	0 15 0
3 ..	Dr. Sillar, Rainford, ..	2 0	.. Jas. Agnew ..	0 10 0
4 ..	W. Hayes, Esq., Frodsham	1 10	.. Peter Walton...	0 7 0
5 ..	Mr. J. Whitlow, Lwr. Whitley	1 0	.. J. Whitley, jun.	0 5 0
6 ..	Mr. S. Scotson, Toxteth Park	0 12	.. Wm. Tipping ..	0 2 6

At half-past two o'clock a party of fifty-two sat down to a farmer's dinner, provided by Mr. Turner, at Preston Brook. The secretary, Mr. Ledger, officiated as president, and the treasurer Mr. Green, as vice-president.

The ploughing match was quite a novelty in this neighbourhood, and the day being fine, the farmers and others interested in agriculture enjoyed a great treat, and the excitement which has been caused amongst ploughmen will not be without its benefit. The prejudices of the Cheshire farmer against the *iron ploughs* are gradually giving way, and the approved method of ploughing *double, without a driver*, more likely to be adopted for the future. Amongst the company in the field were Hervey Aston, Esq., and Capt. Bulkeley; Wm. Hayes, Esq.; Rev. J. Turner; and Messrs. Pickering, Frodsham; Wm. Wright, Esq., Runcorn; Mr. John Knowles, jun., Liverpool; Mr. Kay, sen., and Mr. Kay, jun., Clifton; Mr. Hampson, High Legh; Mr. Wild, Weaverham; Mr. Chadwick; Mr. Thos. Okell, and Mr. Beckett, of Sutton; Mr. H. White, Aston; Mr. Ledger; Mr. Green, &c. &c.

N.B.—The only wooden plough which obtained a prize was No. 4.

AGRICULTURAL MEETINGS AND AGITATIONS.

(ORIGINAL.)

It is curious to observe the progress of a particular opinion on any subject, in the mind of the individual who has adopted it; with what readiness everything is laid hold of that can assist in any shape to confirm the view he has taken; and how confidently it is published as being useful, not only in the sphere of action to which nature would seem to have confined it, but as capable of being extended to a great variety of purposes, and of conferring benefits unseen by any persons except the promulgators themselves, and which experience has ever shown to have had existence only in their sanguine imaginations. A great part of mankind seem wonderfully blessed by nature with a prodigious share of wisdom in their own estimation of themselves; for though the experience shown us in the picture page of history is confirmed by our daily observation, of the utter futility of human opinions on subjects that are hourly exposed to the vicissitudes that are daily occurring in the incongruous mass of human beings, and though such subjects have ever puzzled and baffled our wisest men, and will continue to do so, owing to circumstances which no human agency can control; yet we find individuals wise enough to advance opinions that would seem calculated to overcome all existing obstacles and to direct events themselves. But "circum-

stances," says Sterne, "govern everything in this world, for no man can govern them;" and though the most careless observer must be fully sensible of the unvarying truth of this observation, yet little attention seems paid to it, as it militates too strongly against the fond conceits and theories of our sanguine projectors. It may be also observed that in the mass of mankind we generally find that persons of every different profession think they understand another business in all its bearings and ramifications much better than those engaged in the business itself, and they never cease obtruding their crude conceptions and hasty opinions, not only as their private thoughts on the subject, but as capable of being applied and of working more good than any other yet known. Of this general, applicable, and wonder-working knowledge, no art has partaken more largely than that of agriculture; for very few persons will be found in any profession who "in their own opinion" do not understand farming. Every person is capable of forming an opinion on the subject; he can even prescribe better modes of proceeding, attended with such results as would seem almost capable of raising mankind from their present imperfect condition to a state superior to any ever contemplated by Owen or More. That great improvements may be everywhere effected, no person will deny; how they are to be effected, is a very different question: and this point being duly considered compels us to receive with caution all proposals that are to be attended with consequences so great and seemingly beyond the usual results in life. An improvement will confer benefits where it is applicable; where physical and artificial obstacles intervene, it cannot exist.

Some time ago my attention was drawn to this subject from reading the account of the proceedings of an agricultural society in Lancashire, where a long-premeditated oration was delivered by Mr. Binns, on the great advantages to be derived from the drilling of culmiferous crops. Sowing by hand, he tells us, is a most barbarous practice, disgraceful to the name of farming; while drilling possesses a great many advantages, and, if universally followed, would relieve the farmer from many of his present difficulties, give us cheap bread, and even make us independent of a foreign supply of grain. The learned gentleman seems to have entirely forgotten the maxim of Sterne above quoted, and to have adopted to the full that generalizing principle which supposes success and benefit from every case of a similar application, overlooking as unworthy of notice the difference of circumstances under which the application must be made, and on which the whole question hinges. The drilling of grain differs much from the drilling of green crops. The produce of the latter grows on or below the ground, and admits of pulverization by horse and hand hoeing to a late period of their growth; but culmiferous crops soon shoot up and exclude all cultivation, and the utmost that can be effected is a slight pulverization by scarifying and hoeing, and a check given to weeds that infest the lands in defiance of the cleaning by green crops. An opportunity is also afforded of pulling by hand any tall weeds among the crops; and, beyond these trivial advantages, I never could perceive any benefit from drilling, from an extensive experience on a great variety of soils where both methods were practised. On lighter wheat soils, and on black top'd soils, apt to throw out the plants during winter, it was thought to be useful in giving the plants a better hold; but

in the latter case little or no difference was, in the end, perceptible. On loamy sands, such as we find in Norfolk, great advantages are said to be derived from drilling; yet we have never seen any comparative statements of the results of satisfactory trials between the two methods, but, like many similar practises, may rest on supposition only. No more beautiful specimen of correct farming can be seen than the drilled wheats in Norfolk; but the soil and climate produces it: and I think no judicious farmer in that county will assert that their drilling machines can be applied on all soils where wheat is sown. In the process of drilling grain crops, two methods prevail; one by a drill machine, provided with inserting coulters, and with cups fixed on a revolving axle, and sows ten rows and upwards, at distances of 10 to 14 inches. The other is by means of small ploughs drawn by one horse making drills at regular distances; the wheat is sown broad-cast, and harrowed in. On dry fine lands the drill machines answer very well; but on stiff loams, ploughed in October, to be sown with wheat, after a crop of mangel wurzel, potatoes, or rutabaga, I have seen them repeatedly tried and fail: the coulters cannot penetrate the damp stiff soil to deposit the seed, though assisted by all the superincumbent weight the horses can draw. On the wet clays of various descriptions which constitute the greater part of our wheat soils under summer fallows, the machines are more useless still; many of these lands lie in crooked ridges of unequal breadth and height, and prevent sowing by machine either lengthwise or across; if tried across, the machine sinks and sticks fast when the horse is descending the side of the ridge, and rises out of the ground when the horse ascends another ridge: a half-hour's rain will stop sowing and harrowing on these thin soils, and much more a machine with ten coulters; and a rain of a few hours' duration will render impossible any such application for that season. I have had the whole process suspended for a week, and have been under the necessity of ploughing with the horses walking in the furrows, and of harrowing with a tree stretching across the ridge, to which the harrows were attached. As to drilling by means of small ploughs, a man and horse will perform about $1\frac{1}{4}$ acres per day; and a farmer who has got from 60 to 100 acres and upwards to sow, will hardly be persuaded to risk the season on such soils for at least a week, in order to get it drilled. A field may be so treated in the early part of the season; but, as the seed season advances, it is the earnest attention of our best clay farmers to sow close up to the ploughs every second day at farthest; and with every attention they can bestow the season often compels a very imperfect finishing. Drilling has been recommended as depositing the seed at equal depths, and producing an equal vegetation; and it has been objected to as causing late tillering and unequal ripening. It is increasing in practice in some places, and in others it has been abandoned. To attempt the cleaning of foul lands by drilling and hoeing grain crops, is preposterous,—that belongs to the fallow crops; weeds may be checked, and tall ones may be pulled by hand, and from long experience in hoeing wheat in the spring and in drilling, I never yet could see any benefit from it. It is said the grass seeds are much benefited; it may be so on dry, early, lands, but I have ever made a much better performance by means of grass seed-harrows and a heavy roll after them than by hoeing. I would recommend

Mr. Binns to qualify very much his expectations from the drilling of corn crops, for my own part I never can be induced to adopt his "generalizing principle," now much too common, of expecting similar results in different circumstances of application. An expence must attend drilling, the advantages must exceed that expence by a something to induce the adoption of the practice. I would recommend complete draining where necessary, complete cleaning by fallow crops, and "manuring" by every possible means, and then it will matter little to sow by drill or broadcast. Our system of tile draining, if ever applied to these soils, may render them drier and more accessible at proper seasons, but that increase of productiveness will not affect the question of drilling and broadcast, for each method will be equally benefited, granting that the draining render them capable of being drilled.

As a concomitant to this panacea of Mr. Binns, we have been lately presented with a new implement, called an "agricissor, or a perpetual spade working wheel," which also in the opinion of the author, will produce some wonderful effects, astonish us with Mosaic miracles, and elevate the lower orders of society, at once to plenty and contentment, and even raise our kingdom to a state of prosperity never before heard of or ever contemplated. The plough, that venerable implement, which in some shape or other has descended to us from the earliest antiquity, is to be entirely superseded as both useless and unprofitable. The new machine, which presents a most formidable appearance, is to be worked by a quarter of the power required by the common plough, and is capable of being propelled by steam, oxen, or by manual labour. We have not been favoured with any statement of the quantity and quality of the work it will perform, if it be applicable to any particular soils, or to all indiscriminately; but as the author seems a universal dealer, like Mr. Binns, I conclude it to apply to the latter. I have the misfortune to dissent from both these gentlemen, for it appears to me incredible that such a machine will cultivate our lands at one-fourth of the power of two horses, (one-half of a horse's power) or of four horses, (one horse's power,) or at one-fourth the power of steam, oxen, or manual labour, equal to two or four horses. The machine seems capable of one application only, viz., cultivating land in a flat fallow state, but I cannot see how it will ever effect that, for the spades seem fixed in a straight line on the circumference of the wheel, and consequently in revolving must follow each other, and cut a narrow incision without stirring the land at all. The author seems to have forgot that the plough performs various purposes, it ploughs our leys and stubbles, works our fallows, drills our green crops, seedfurrows our wheat soils, &c., all which his machine must perform before he can supersede the plough. If he did so, horses would still be wanting for carting and other purposes; and he seems to have never once thought of meeting with soils that his spade would not penetrate. His observations on the obloquy always thrown on any new proposal or invention are very just, but a projector should be careful to advance feasible improvements, and to limit the benefits he expects within reasonable bounds. Granting a benefit to accrue in certain cases of application, as other inventions are found to act, his unbounded expectations from one thing, and that not very feasible looking, are certainly ridiculous, chimerical, and absurd.

The author of this implement in describing its expected effects, alludes to our poor-laws, our waste lands, our decreasing prosperity, the state of our

labourers, our corn-laws, and arrives at the present subject of out-cry, "cheap bread, plenty and profitable labour." No doubt can exist of the great desire that these objects may be attained, but how they are to be attained is a very different question. Our manufacturers must have bread cheap to enable them to compete with the foreigner, but how he can do so without reducing the price of labour here, is no easy matter to see; and if bread be lowered in price, and wages also be reduced, the labourer will derive little benefit, unless all other articles be proportionably reduced. To have provisions low and wages high, or even at the present rate, seems irreconcilable by all past experience, for it is generally admitted to be regulated by the supply and demand. But the "mobile vulgus" and their leaders must have a hobby-horse to ride, till it sinks under them, and then they will find another. I have been long ago of opinion that our present corn laws have had little to do with the price of grain in this country, the quantity we receive from abroad being very small, and I have long since come to the conclusion of paying little attention to the opinions and theories of calculators, who pretend to be able to prophesy the exact tendency of any measure, the result of which is hid in the chapter of accidents, and in the womb of futurity, and I have lived long enough to see almost all such prophesyings wholly falsified by the event. In 1828, it was foretold that a great part of our wheat lands would be thrown out of cultivation, as our present laws would bring too low prices, and no such consequence has followed. I can recollect when steam boats first appeared in our friths and rivers, it was foretold they would diminish the number of stage coaches, spoil the breeding of horses, hinder the farmer from raising oats and hay, and many other evils besides. At the present day, the same is foretold of our railways. Now none of these things have happened, coaches have multiplied, and if employment and capital be driven from one channel it will find another, and if the farmer raise neither oats, hay, nor horses, he will raise something else suitable for the altered demand, for the earth must be cultivated to supply the wants of the human race. Mankind too often employ their time in pursuit of fallacies, and wholly neglect the substance for the shadow. In place of our useless meetings and fine speeches, and long calculations, which only are useful in showing the ignorance and stupidity of the calculator, I would rather wish to see our lands cultivated at home, and our labourers employed, the application of a small sum of capital now lying useless would render useless all corn laws, and render us independent of any foreign supply. If the manufacturers by having cheap bread, and consequently cheap labour, will be enabled to compete with his articles in the foreign market; it follows that the farmer by having the same advantages will compete with the foreign grower of corn, and exclude him from the home market. Our geographical position admits of cultivation and grazing in a high degree, we have labour, skill, and capital, and a fertile soil, and known means of improvement to double our present produce; but it is our employment to meet and speak on the subject and never do any thing. In the artificial system we have raised, there seems no just grounds for a free trade in corn, without the same liberty in other articles, though certainly a freedom in trade without any prohibitory enactments is the true system, every article to be transported at the expence of production and of carriage. In this state of intercourse, countries producing the same articles would have only the expence of manu-

facture against each other, and when one adopts any improvement to cheapen that process, he will beat the other who does not adopt it; "instance," the Scotch farmer, who has adopted every improvement known to us to produce that result, sends his produce at the expence of carriage, and beats us in our own markets, because we have not adopted the same means. In this state also, the revenue would come to be derived from property, the legitimate source certainly, and just as well pay it directly from the produce of the land, as in an indirect method by taxes on the eatables and wearables of life. But the irresistible, incomprehensible "something," in the current of human affairs baffles all our calculations, oversets all our theories, and always leaves us wondering at our own ignorance. RUSTICUS.

March 12, 1839.

RUTLAND HEDGE-CUTTING AND DITCHING.—The gratifying competition for the prizes offered for the most workmanlike execution of the above labour, took place at Bolton, on Tuesday, Feb. 26. There were twenty-five labourers competed for these premiums; and on Wednesday, Mr. Baker, of Cottesmore, Mr. Sharrard, of Langham, and Mr. Clarke Morris, of Oakham, examined the work, and made the award as follows:—No. 17, William Neale, of Wardley, first prize, five sovereigns; 23, Everard King, of Belton, second prize, three sovereigns; 13, William Tookey, of Belton, third prize, two sovereigns; 15, Thomas Smith, of Belton, was commended, and rewarded by the gift of one sovereign from the judges and gentlemen, who after examining the work, retired to Mr. Burgess's, of Ridlington Park, to partake of a good dinner provided with true English hospitality, and to enjoy the discussion of agricultural subjects. Hedge-cutting and ditching has now received the particular attention of Mr. Baker, for the fourth public exhibition, and we think that its general usefulness will be increased by the alteration of the scheme, the work being executed on the *south* side of the county, after three years trial on the *north* side. We have much pleasure in giving insertion to the following uniquely-written, but honestly-expressed epistle: it proves at all events, that the exertions of Mr. Baker, (the originator, we believe, of all this useful competition) have been received in the right light by that class to whom they are especially intended to be of service—the labourers themselves. The letter was written a few days ago to Mr. B.:—

"Honoured Sir I Humbly Solicit your pardon for attempting to write to you but I am desirous of mentioning two or three things which I believe to be true I do Sir from my heart Congratulate you on your Success in Agriculture and every other improvement; Sir I do believe that under God; you are and will be A blessing to our native county; Sir in several instances I see the Master the Servant the Labourer all Striving to outvie each other which seldom if ever was done in Rutland before you put your good sense and sound judgment into practice Sir I believe all these Improvements which you have been so strenuously endeavouring to promote are blessings to us and will be in future to our Children.

I remain Sir your very Obligated And humble servant
J— E— Please Sir to enter me also W— L— as candidates for the Rutland prise Hedge Cutting.

FARMERS' CLUBS.—A Farmers' Club has recently been established at Needham-market, for the encouragement of agriculture, which bids fair to rival in usefulness the Yoxford, the Harleston, and the Ashbocking clubs. The second meeting of this association was held on Saturday last. The chairman is J. K. Moore, Esq.

GEOLOGY AND AGRICULTURE.

The connection of Geology with Agriculture, although fully admitted, has in but few instances been treated upon in a manner sufficiently clear and explicit to become practically useful. The subjoined extract from a "History of Geology," by Professor Phillips, of King's College, London, gives some useful hints to landed proprietors. If with all the advantages which they enjoy from education, and the possession of means, they do not set an example, can we feel surprised that the occupiers should display an apathy in adopting improvements?

"Agriculture, which, of all branches of human industry, seems most directly dependent on the qualities of soil and substrata, has been hitherto very little benefited by the progress of geological science. Perhaps the expectations of those speculative farmers who desire to turn to good account the discoveries of botanical physiology, vegetable chemistry, and geology, require some better direction to attainable objects, than botanists, chemists, or geologists, are likely to furnish. That plants, by growing frequently on the same spot, poison the soil for themselves, though not for other plants, appears a reasonable generalization of well-known facts: that certain succession of crops are best fitted for particular soils, is incompletely known by experience, and may be turned to a profitable account by the union of botanical and chemical research. The chemical quality of soils, to judge from a superficial examination, appears to be of real importance. Why else, amidst the heather which covers thousands of acres in the moorlands of the north of England, should there appear not one plant of Dutch clover, though, upon the removal of the heath, and the application of quick lime, this plant springs up in abundance? Why else does the *Cistus helianthemum* love the calcareous soil, the oak delight in stiff clay, the birch and larch flourishes on barren sand? Yet, all the conclusions drawn from facts of this nature, exceptions arise, and the relation of the soil to moisture appears quite as fertile and general a source of vegetation and productiveness, as any peculiarity of chemical constitution. We once took the pains to notice every species of plant growing on a purely calcareous soil 2,000 feet above the sea, on Cam Fell in Yorkshire, and among them all, it appeared that not one was commonly supposed peculiar to limestone. It appears to us that it is chiefly by their various power of conducting moisture from the surface that rocks of different kinds that influence the soil above them; and this is a circumstance which is sometimes interesting to the farmer, for another reason. It is not doubtful that in many cases there is a possibility of draining the land which is underlaid at some small depth by a jointed calcareous rock, just as by sinking a few feet in a mining country, through clay to limestone, the whole drainage of a mine may often be passed downwards, through the natural channels of the rocks. One of the most obvious sources of advantage to the farmer from an acquaintance with the distribution of mineral masses is the facility which, in many instances, the injurious effect of small springs coming to the surface may be obviated. The theory of the earth's internal drainage is so simple, that every man of common sense would be able to drain his lands upon sure principles, or else to know precisely why it cannot be drained, if he were to become so much of a geologist as to learn what rocks existed under his land, at what depth, and in what positions. Springs never issue from stratified masses, except from reservoirs somehow produced in jointed rock, and at the level of the overflow of these subterranean cavities. Faults in the strata very frequently limit these reservoirs, and determine the points of efflux of the water. Let those faults be ascertained, or the edge of the jointed rock be found, the cure of the evil is immediate. But some geological information is needed here; and landed proprietors, who think it less

troublesome to employ an agent than to direct such a simple operation, may at least profit by this hint, and choose an agent who knows something of the rocks he is to drain. The same knowledge which guides to a right general method of draining, conducts us to a clear and almost certain method of finding water by wells, and enables an engineer to predict with much probability, whether, at what depth, in what quantity, and even of what quality, water will be found. Why is water so generally found by deep wells at London and Paris? Why is it often so abundant in these wells? Why is it often of pure quality, though in the descent small quantities of impure water are frequently penetrated? Because under both these capitals, the open, jointed, and purely calcareous chalk strata, in great thickness, converge with opposite dips, and collect the water, which, upon the perforation of the superincumbent masses of clay, &c., rises with much force, and continues to flow, unless drained by other of these "Artesian" wells. This method of obtaining water is now commonly known, but deserves to be far more extensively practised in agricultural districts, where natural springs of pure water are rare blessings. Another thing, probably of importance to agriculturists, is the discovery of substances at small depths, which, if brought to the surface, would enrich, by a suitable mixture, the soil of the fields. This is very strongly insisted on by Sir H. Davy in his Essays, and considering how easy a thing it is for a landowner to ascertain positively the series of strata in his estate, it is somewhat marvellous that so few cases can be quoted, except that of Sir John Johnstone, Bart., of Hackness, near Scarborough, in which this easy work has been performed. Finally, in experiments for the introduction of new systems and modes of management, with respect to cattle and crops, it will be of great consequence to take notice of the qualities of the soil, substrata and water, for these undoubtedly exercise a real and perhaps decisive influence over the result."

THE INTELLIGENCE OF ANIMALS.—We take the following remarkable instances of the intelligence of animals from Lord Brougham's new work, "Dissertations on Subjects of Science connected with Natural Theology," from which he draws the conclusion that animal intelligence differs from human, not in kind, but in degree. Our readers may doubt his Lordship's conclusion, but his facts are, at all events, interesting:—"In the forests of Tartary and South America, where the wild horse is gregarious, there are herds of 500 or 600, which, being ill prepared for fighting, or indeed for any resistance, and knowing that their safety is in flight, when they sleep, appoint one in rotation who acts as sentinel, while the rest are asleep. If a man approaches, the sentinel walks towards him as if to reconnoitre, or see whether he may be deterred from coming near—if the man continues, he neighs aloud and in a peculiar tone, which rouses the herd, and all gallop away, the sentinel, bringing up the rear. Nothing can be more judicious or rational than this arrangement, simple as it is. So a horse, belonging to a smuggler at Dover, used to be laden with run spirits, and sent on the road unattended to reach the rendezvous. When he descried a soldier, he would jump off the highway, and hide himself in a ditch, and when discovered would fight for his load. The cunning of foxes is proverbial; but I know not if it was ever more remarkably displayed than in the Duke of Beaufort's country; where Reynard, being hard pressed, disappeared suddenly, and was, after strict search, found immersed in a water-pool up to the very snout, by which he held a willow-bough hanging over the pond. The cunning of a dog, which Sergeant Wilde tells me of, as known to him, is at least equal. He used to be tied up, as a precaution against hunting sheep. At night he slipped his head out of the collar, and returning before dawn put on the collar again, in order to conceal his nocturnal excursion. No-

body has more familiarity with various animals (beside his great knowledge of his own species) than my excellent, learned, and ingenious friend, the Serjeant; and he possesses many curious ones himself. His anecdote of a drover's dog is striking, as he gave it me, when we happened, near this place, to meet a drove. The man had bought 17 out of 20 oxen from a field, leaving the remaining three there mixed with another herd. He then said to the dog, 'Go, fetch them;' and he went and singled out those very three. The Serjeant's brother, however, a highly respectable man, lately Sheriff of London, has a dog that distinguishes Saturday night, from the practice of tying him up for the Sunday, which he dislikes. He will escape on Saturday night, and return on Monday morning. The Serjeant himself had a gander which was at a distance from the goose, and hearing her make an extraordinary noise, ran back and put his head into the cage—then brought back all the goslings one by one, and put them into it with the mother, whose separation from her brood had occasioned her clamour. He then returned to the place whence her cries had called him.' "A swallow had slipped its foot into the noose of a cord attached to a spout in the College des Quatre Nations at Paris, and by endeavouring to escape had drawn the knot tight. Its strength being exhausted in vain attempts to fly, it uttered piteous cries, which assembled a vast flock of other swallows from the large basin between the Tuileries and Pont Neuf. They seemed to crowd and consult together for a little while, and then one of them darted at the string, and struck at it with his beak as he flew past; and others following in quick succession did the same, striking at the same part, till, after continuing this combined operation for half an hour, they succeeded in severing the cord, and freeing their companion. They all continued flocking and hovering till night; only, instead of the tumult and agitation in which they had been at their first assembling, they were chattering as if without any anxiety at all, but conscious of having succeeded."

THE CORN LAWS.

TO COLONEL TORRENS, M.P.

SIR,—The object of your three letters to the Marquis of Chandos is to prove,

1st. That notwithstanding the great advantages possessed by England in her "coal, iron, canals, railroads, coasts, harbours, and geographical position," with the superior skill and industry of her operatives, she is in danger of losing her foreign sale of manufactured goods.

2nd. That this danger arises from the high price of food in England.

3rd. That "the cause of the high price of food is the existing corn laws." And you insinuate that the price of corn in England remains nearly twice as high as upon the continent. (page 5.) You then proceed to make your calculation on this supposition, which is very unfair; since it is well known that the usual price of wheat per bushel on the continent, taking one place with another, is at least equal to an ounce of silver, (about 5s. 2d.) and that the average of the last seven years in England being less than 7s., has not reached the value of an ounce and a half of silver. It is indeed higher now, but this is entirely owing to a great failure in the crops at home and abroad; and under such circumstances it will always be vain to expect a low price. It is surely not candid to make the state of things appear worse than it really is. And those persons act ungenerously, who take advantage of this period of privation and suffering, to excite the unreflecting masses of the people, and

to raise an unreasonable clamour against the agriculturists; whose losses were so great two or three years ago, and whose deficient crops this year barely remunerate them at present prices. And after all, the manufacturing capitalists have no great reason to complain *at present* it appears, since the chairman of the Manchester Chamber of Commerce has just proved in parliament, that the goods exported in 1838 considerably exceeded in amount the average of the four preceding years. Many causes indeed concur to make it not improbable that our export of manufactured goods will gradually diminish, in spite of any thing we can do to prevent it; and this consideration should make us hesitate to try rash experiments, which may cripple our own agriculture, employing as it does at present so large a portion of the people. We are now in that state described by Hume, "When one nation has gotten the start of another in trade, it is very difficult for the other to regain the ground it has lost, because of the superior industry and skill of the former, and the greater stocks of which its merchants are possessed, and which enable them to trade on so much smaller profits. But these advantages are compensated in some measure by the low price of labour in every nation which has not an extensive commerce, and does not much abound in gold and silver. Manufactures, therefore, gradually shift their places, leaving those countries and provinces which they have already enriched, and flying to others, whither they are allured by the cheapness of provisions and labour, till they have enriched these also, and are again banished by the same causes. And in general we may observe, that the dearthness of every thing from plenty of money, is a disadvantage which attends an established commerce, and sets bounds to it in every country, by enabling the poorer states to undersell the richer in all foreign markets." (Hume, vol. i. part II., Essay 3, p. 300.) It appears then that there is a natural tendency to the result, of which you are apprehensive. And this country is peculiarly unfortunate in its enormous weight of taxation, which by increasing the expense of production, has had the same effect on the soil as if it had become less fertile. The evil is nearly the same as regards every product which is the result chiefly of manual labour. "L'enormité des charges supportée par le peuple anglais, a rendu exorbitamment coûteux tous les produits de son sol et de son industrie. Chacune des consommations des producteurs de toute les classes, chacun de leur mouvements, pour ainsi dire, étant taxés, les résultats de leur industrie sont devenus plus chers, sans que cet cherté tournât à leur avantage." (De l'Angeterre et des Anglais, par J. B. Say, page 18.)* And if we should be told that to remedy these evils, we should repeal the corn laws, and import corn from countries where we can buy it cheaper than we can grow it at home, I would ask what is to become of the hundreds of thousands of agricultural labourers whose occupation will then cease? And if, as justice would require in such a case, all restrictions of

* "The enormous burthens supported by the English people have made all the products of their soil and industry exorbitantly dear. Every article consumed by the producers of every class, every one of their motions, so to speak, being taxed, the products of their industry are become dearer, without being productive of any advantage to themselves." (England and the English, by J. B. Say, page 18.) 1816.

every kind should be abolished, how can any product of highly taxed manual labour, stand a competition with that of untaxed foreign labourers of very frugal habits? As, however, some people strangely imagine that the repeal of the corn laws *alone* is wanting to restore permanently, former low wages and cheapness, I shall call as a witness on this point, the late Mr. Huskisson, the idol of the free traders. "The noble Lord (Lord A. Hamilton) deceives himself if he imagines that we could return to the state in which we were before we entered on the contest." (the French war.) "This was one of the most dangerous errors that could be entertained. The whole expenditure of the country at that time, only amounted to sixteen millions....He (Mr. H.) was confident that our peace establishment must entail on us a permanent charge of nearer 60 than 50 millions." (This was in paper money, and it is even now more than 50 millions.) "And would this produce no alteration in the money value of articles? When gentlemen talked of the high price of bread, did they forget that every thing else had risen in proportion, and that, not in consequence of the high price of bread, but the amount of taxation. It had been said that the obvious remedy was for the landlords to lower their rents. *If even the whole rental of the country were remitted it would be impossible for the country to return to the prices before the war.*" (Speeches of the Right Hon. W. Huskisson, p. p. 299, 300.)

The manufacturers, you say, can scarcely compete with foreigners, even with superior operatives and better *machinery*—why is this? Because manual labour is too expensive. Farmers, then, who employ manual labour only, cannot expect to compete with them; although in skill and industry they and their labourers are decidedly superior. Why is labour so expensive and wages so high? Because necessities (not corn only) are so high priced. Why, with superior skill and industry, are these so expensive in England? Because their price is composed in great part of taxation. *Free* importation then, to that extent would operate as a bounty on foreign untaxed products whether of corn or of other commodities, and the home producers would pay more than their just share of the taxes. Instead then of laying the blame on the corn laws, why not go at once to the root of the evil, and reduce taxation? Why not, at any rate, reduce it in that proportion in which its pressure was so unjustly increased, by raising the value of the money in which it was contracted? Then indeed we might have free trade in corn, and in every thing else. Why not adopt at this time one of the alternatives you admit ought to have been done at the end of the war? The second would at that time have been decidedly the most just; and so I think it would now; as it might be arranged only to keep things at the late average, to prevent injustice from another rise in the value of money.

Corn, and all other protecting laws, may guard many classes from unfair competition, but they are all objectionable on this ground, that they leave those who manufacture for the foreign market exposed to every disadvantage. But if protection had been given generally, by preventing the rise of money, as you mention, it would have been sufficient, and the productive classes would not in that case have been robbed as they *all* have been.

If the corn laws are surrendered, there ought to be a revision of Peel's Bill even now: other-

wise the expected benefit to the productive classes cannot be permanent; and the landowners will have been sacrificed in vain.

I am glad that the anti-corn law people *speak out* and demand a *total repeal*; I was afraid they would entice the agriculturists to accept a low *fixed duty*, which would have been tolerated so long as home and foreign prices were about equal and no longer.

I shall not now examine your theory of a free corn trade as it may affect profits—it is plausible, I admit, in a certain degree even as regards the landowners; but any general benefit from it must require much time; and there is no apparent reason for the adoption of the course you recommend *unconditionally*, without any *proposed* means for alleviating the immediate evil to be apprehended.

I have said above that your theory is plausible, but I fear it would prove fallacious; for the grain expected must depend on the fact of a very great increase of the export trade; more than equal to the loss of demand from the agriculturist at home, which is extremely doubtful. Without such increase, however, our discarded tillers of the soil could *never* be absorbed in manufacturing; and then the whole body must be reduced to the Irish level or that of the north of Europe, (much as you deprecate such a result at page 45,) followed probably by general anarchy.

Free traders often give as a reason for swamping our agriculture,—that capital and industry can be employed with greater gain in manufacturing. Now will not foreign nations find out this? Do they not know what a source of wealth manufacturing has been to us, in spite of corn laws and high wages? And do they not already see the policy of manufacturing for themselves, without any regard, at first, to cheapness, or dearness? I think it very probable that the manufacturers will realize the fable of the dog and the shadow.

I am, Sir, very respectfully,

Your obedient servant,

T. F.

THE ENGLISH AGRICULTURAL SOCIETY.
—(To the Editor of the *Morning Chronicle*.)—Sir—Perceiving a mistake in that part of your report of my observations at the meeting of the Central Agricultural Society, relative to the formation of the English Agricultural Society, I am most anxious that it should be properly explained. I expressly stated that it was not formed in opposition to the Central Society. I lauded the principle of its formation, and expressed a hope that it would flourish, having been established for the *encouragement*, as the Central was for the *protection* of agricultural interests.—I have the honour to be, your obedient humble servant, W. ORMSBY GORE.

Portland-place, Feb. 28.

DIBBLING MACHINE.—Mr. James Hitchins, of this city, is about to introduce to the notice of the farmer and the public a machine for dibbling wheat, turnips, or any kind of grain and seed. By a simple arrangement, seed and bone dust, in small or large portions, are deposited together in holes made at exact intervals. The whole apparatus can be worked at the full speed of a horse in a walking-pace. It is well known that bone-dust, in drill-rows, is of small value except in the first stage of vegetation, that when not in actual contact with the seed it is rather detrimental than beneficial. By this dibbling machine 75 per cent. will be saved in the amount of bone-dust required, and nearly all the expense of thinning the plants and keeping them clean in future will be economised.—*Lincoln Gazette*.

ON ESTIMATING THE VALUE OF FARMS.

Those who have had opportunity of seeing the manner in which assessments were wont to be made, must be satisfied, not only of the absence of all rule in making them, but also of the almost universal inequality and inaccuracy everywhere prevalent. It is true, that more recently, by the specific direction of local acts, and in accordance with general improvement, the system has in some measure been amended. With the New Poor Law a new system of assessment will be introduced, and if properly managed, must be considered a measure of justice. We were not aware that any person had attempted to give written directions upon the subject, until we saw two little *brochures* from the pen of Mr. Howe, the latter of which is just published by Ridgway. The directions given in estimating the rate of assessment to be laid upon a farm being equally useful to a tenant about to make selection of a farm for occupation, we subjoin them for the benefit of our agricultural readers.

"I shall now treat on Landed Property, and endeavour to show what tends to make a farm of more or less value. To be situate near a good market for produce, and where manure can be easily obtained; a good house and homestead; and good land laying to a good aspect, with good fences, and a good supply of fuel and water thereon. The next consideration may be whether the homestead is centrally situated; then if it is hilly land; whether the produce is to be drawn home up hill or down,—for upon some farms by the heat and hurry of harvest, from early in the morning to almost midnight, horses are dreadfully distressed working up hills, and sometimes past recovery,—the produce must be carried if possible when it is become in a fit state, and at that season it but seldom happens that assistance can be obtained, all generally being equally engaged at home;—manure may be carried up hill at leisure, sometimes in a frost, which makes it desirable to have the produce come home down hill. Upon all farms for the homestead to be centrally situated is of the utmost importance through the whole year, for the produce to be carried home as speedily and easily as possible; for when they are obliged from necessity to stack in the fields, it is attended with trouble and expense, although sometimes indispensable on account of being so far away; and when land lies at a great distance to have to travel in the course of the week backward and forward, perhaps as far as the plough actually works in one day, is, in reality, either losing one day in the week with the plough, or the horses have to travel the same distance to perform five days ploughing as they would do to plough six days upon land lying contiguous. To draw manure from the farm-yard to land at a great distance is very tedious and expensive; and in a wet harvest, no one that has not experienced it can hardly be aware of the inconvenience and the expense of carting home, and getting produce into a proper state for carting at a great distance; it frequently happens in showery weather by the time it is got into sufficient order a shower falls, and all may return, perhaps having sometimes done more harm than good, whereas on land close to home a little might have been secured. Again, to take stock through fields far, is another inconvenience and loss, from the difficulty of making sheep and cattle keep the road where on one side there may be no hedge, and to make a dead one, or to set hurdles is an expense, and the loss of land by roads through fields may be very considerable; every one must be aware the further land lies from the occupier, the more it is exposed to depredation; indeed, it is almost impossible to point out every inconvenience arising therefrom. I really believe I know farms, the yearly value of which is decreased over a great part of them quite one-fourth from the inconveniences above-

mentioned. For an estate to have good fences, to have on it a good supply of fuel and water in different parts, particularly a stock farm, are very valuable indeed;—for a man and horse to be employed to obtain water, particularly in the harvest, when both are wanted in the field, those who have experienced it are best able to speak.

UNION AGRICULTURAL SOCIETY.

SPRING EXHIBITION OF SEED CORN, GRASS SEEDS, &c.—This exhibition was held at Kelso, within the Town-Hall, on Friday se'nnight, and turned out to be the most important and extensive show of the kind which has yet taken place. The quantity of grain brought forward was so considerable, that it was nearly eleven o'clock before the whole parcels were pitched and properly arranged in the place of exhibition. There were, on the whole, 1662 bushels of seed corn and grass seeds brought forward. Of the "Committee for Seeds," Mr. Boyd, of Cherrytrees, Mr. Oliver, of Blakelaw, Mr. Robertson, Newtonlees, and Mr. Ogden, Harrietfield, attended, and were indefatigable in their exertions to prepare the different parcels for the inspection of the judges—a task of difficult performance, in the short time necessarily allowed, which, however, was well performed. Each parcel was, as usual, in sacks having no distinctive marks; and of each a bushel was taken and carefully weighed, the description and weight *without* the name of the exhibitor being marked on a ticket and placed on one of the sacks. The names of the exhibitors, with a number corresponding to that on each ticket, being kept in the Secretary's list, so as neither to be known to the Committee nor to the Judges, till after the decision of the prizes was given. The weighing was done, under the inspection of the Committee, by Mr. Crosbie, of Kelso Mill, and Mr. William Muir, Kelso.

About one o'clock the Judges—Mr. Hogarth, of Tofts; Mr. Gray, corn-dealer, Gordon; and Patrick Clay, Esq., corn-merchant, Berwick—began the serious and troublesome duty of inspecting the parcels and awarding the premiums; and ultimately decided as follows:—

1. For the best parcel of Seed Barley (common variety), to No. 2, which was found to belong to Mr. Broad, Cliftonhill, weight 55lb. 13oz. per bushel .. £3 0 0
2. For the best parcel of Chevalier Barley, to No. 1, also belonging to Mr. Broad, Cliftonhill, weight 56lb. 5oz. per bushel..... 3 0 0
3. For the best parcel of Potato Oats, to No. 2, which was found to belong to Mr. Nisbet, of Lambden, weight 45lb. 11oz. per bushel..... 3 0 0
4. For the best parcel of Hopetoun Oats, to No. 5, which was found to belong to Captain Walker, Windywalls, weight 44lb. 8oz. per bushel..... 3 0 0
5. For the best parcel of Angus Seed Oats, to No. 2, which was found to belong to Mr. Nisbet, of Lambden, weight 43lb. 2oz. per bushel..... 3 0 0
6. For the best parcel of Blainslie Seed Oats, to No. 3, which was found to belong to Mr. Purves, Burnfoot, weight 41lb. 15oz. per bushel 3 0 0
7. For the best parcel of Perennial Ryegrass, to No. 5, which was found to belong to Mr. Roughhead, seedsman, Haddington, weight 28lb. 7oz. per bushel..... 3 0 0

The following is a list of the exhibitors, and a description of the sorts exhibited, and the weight, per bushel, of each :—

SEED BARLEY (COMMON VARIETY).

	lb.	oz.
No. 1. Mr. Fulton, Hatchednize, 1 parcel..	55	2
2. Mr. Broad, Cliftonhill, 1 do.	55	13
3. Mr. Johnston, Yetholm Mains, 1 do..	54	15
4. Mr. Johnston, Marlefield, 1 do.	55	2
5. Mr. Phipps Turnbull, Crooks, 1 do.	53	1
6. Mr. Mein, of Ormiston, 1 do.	58	9
7. Mr. Bell, Linton, 1 do.	56	5

CHEVALIER BARLEY.

No. 1. Mr. Broad, Cliftonhill, 1 parcel....	56	5
2. Mr. John Elliot, Primrosehill, 1 do..	59	0
3. Mr. James Robertson, Ladyrig, 1 do.	56	10
4. Mr. Jerdon, of Bonjedward, 1 do...	57	0

Each parcel consisted of 5 bolls.

POTATO OATS.

No. 1. Mr. Nisbet, of Lambden, 1 parcel..	45	11
2. Mr. Scott, Courthill, 1 do.	46	2
3. Mr. Johnston, Yetholm Mains, 1 do.	44	9
4. Mr. Johnston, Marlefield, 1 do.	44	5
5. Mr. Cunningham, Cramslaw, 1 do.	45	12
6. Mr. William Stark, Cowrig, 1 do...	46	0
7. Mr. Wm. Riddell, Cappuck, 1 do...	46	0
8. Mr. P. Turnbull, Crooks, 1 do.	44	2
9. Ditto ditto, 1 do.	44	7
10. Mr. Mein, of Ormiston, 1 do.	46	6
11. Mr. Arch. M'Dougal, Cessford, 1 do.	44	14
12. Ditto ditto, 1 do.	46	4
13. Captain Walker, Windywalls, 1 do..	46	15
14. Mr. W. Aitchison, Oxenridge, 1 do.	44	10
15. Dr. Murray, Kersknow, 1 do.	45	2

HOPETOUN OATS.

No. 1. Mr. Scott, Courthill, 1 parcel.	43	7
2. Mr. A. Park, Eccles Bankhead, 1 do.	43	11
3. Mr. Brokie, Belville, 1 do.	43	4
4. Mr. Dun, Roxburgh Mains, 1 do. ..	45	4
5. Captain Walker, Windywalls, 1 do..	44	8
6. Mr. Brodie, Haddon, 1 do.	43	5

ANGUS OR BLAINSLIE SEED OATS.

No. 1. Mr. Nisbet, of Lambden, 1 parcel		
Angus.	43	2
2. Mr. Purves, Burnfoot, 1 do. Blainslie	42	1
3. Ditto ditto, 1 do. ditto ...	41	15
4. Mr. Cunningham, Grahamslaw, 1 do.		
Angus.	44	6
5. Mr. G. Brockie, Lochside, 1 do.		
Blainslie.	41	1
6. Mr. P. Darling, Sydenham, 1 do.		
Angus.	43	5
7. Mr. Brodie, Haddon, 1 do. ditto....	42	6

Each parcel consisted of 6 bolls.

NEW VARIETIES.

No. 1. John Elliot, Esq., Jedburgh, 8 bushels of a new variety of Seed Wheat, called "Dickson's Wheat"	61	1
2. Messrs. Hogg and Wood, Seedsman, Coldstream, 4 bushels Annat Barley.	55	14
3. 4 ditto Pomeranian Barley.	56	3
4. Mr. Whitelock, Maisondieu, 4 bushels Golden Prolific Barley.	53	14
5. Mr. Roughhead, Seedsman, Haddington, 4 bushels Naked Barley.	64	2

PERENNIAL RYEGRASS.

	lb.	oz.
No. 1. Mr. Fulton, Hatchednize, 1 parcel..	22	1
2. Mr. A. Lockie, Seedsman, Kelso, 1 do.	27	15
3. Messrs. Hogg and Wood, Coldstream, 1 ditto.	25	9
4. Mr. Roughhead, Haddington, 1 do..	28	7

Each parcel consisted of six bolls.

Most of the exhibitors had considerable quantities for sale—from 40 to 120 bolls of each kind.

The Judges declared that they had very great difficulty in giving their award, many of the parcels being so nearly equal, that the discovery of a few seeds in one parcel was all that turned the scale in favour of another. But so excellent was the whole, that they had no hesitation in recommending the different stocks from which the parcels had been taken, to all those in want of seed corn.

The parcel of ryegrass, exhibited by Mr. Roughhead, of Haddington, which obtained the premium, was one of uncommon excellence; those shown by Mr. Lockie, Kelso, and Messrs. Hogg and Wood, of Coldstream, were also very good; and the exhibition of a great variety of agricultural seeds by the latter gentlemen attracted much notice.

Among the "new varieties of Seed Corn," was "Dickson's Wheat" shown by John Elliot, Esq., elsewhere more particularly noticed; a fine sample of "Golden Prolific" Barley, by Mr. Whitelock, Maisondieu; a curious sample of "Naked" Barley, by Mr. Roughhead; and samples of "Annat" and "Pomeranian" Barley, and Italian Ryegrass, by Messrs. Hogg and Wood; but the judges did not award prizes for any of these, considering that farther experience in their good qualities was required.

On the judges having finished their work, and after the names of all the exhibitors had been written on the show tickets attached to each parcel, public admission was given to the Hall. The attendance appeared to be from all parts of the country, and the highest interest seemed to be taken in the exhibition. George Bailie, jun., Esq., one of the vice-presidents, honoured the meeting by attending from an early hour; and most of the eminent agriculturists of the district were present.

One of the most important points of the show has yet to be noticed—the business done—it was very extensive; and the following prices were obtained for the seed corn exhibited, viz :—

Per boll of 6 imp. bush.

Potato oats, from.	25s. to 28s.
Hopetoun oats, from.	24s. to 25s.
Angus and Blainslie oats, from	24s. to 25s.
Early Angus oats.	26s.
Common Barley, from.	28s. to 35s.
Chevalier Barley, from.	28s. to 31s.
"Dickson's" Wheat, in parcels at the rate of.	70s.

The Prize Ryegrass was bought by Mr. Dudgeon, of Spylaw, at 38s. per boll.

The following is a detailed description of the parcel of "Dickson's Wheat," exhibited by John Elliot, Esq., banker, Jedburgh, from his farm of Grange, near that town, as given by the grower :—

1. It is a bearded wheat of a red description—was introduced into this country by Mr. James Dickson, of Hawick, and is now called "Dickson's Wheat."

2. I had two acres of last crop on my farm of Grange. It was sown on the 12th April, on land of inferior quality, after turnips.

3. It was reaped before any other wheat on the farm,

some of which had been sown in November, and the rest in January, and all in lower and warmer situations than the bearded wheat.

4. Its produce is 27 bushels per acre.

5. The only other person in this country who has grown it, so far as I know, is Mr. Bell, of Menslaws. He sowed it on the 18th April, 1837, and it produced one of the best crops on his farm, and was equal in weight to good Hunter's Wheat.

CULTIVATION OF GORSE.

To satisfy the farmer, that gorse would be a good substitute for turnips on poor soil, I subjoin a few quotations from a small volume entitled *Hints to Farmers*, by O. O. Roberts, Esq., Carnarvon, North Wales:—"This evergreen plant," says Mr. Roberts, "from its habits and nutritive qualities of food for horses, neat cattle, and sheep, is highly deserving of attention. It will flourish upon all kinds of soil, its produce varying at one year's growth from 10 to 15 tons, and at two years' growth from 16 to 28 tons per acre. Horses fed on it, ground or cut, will be found fully as equal to their work, and be in full as good condition, as when fed on the very best hay; and milk cows, when supplied with it as a substitute for hay, will be found to yield a larger quantity of milk and butter, richer both in flavour and quality. To the agriculturist who would make the most of his land, gorse will be found a most valuable auxiliary—it will make him, to a certain extent, independent of the losses so generally produced by the failure of his turnip crops, in consequence of the ravages of the fly. A few acres of gorse, proportionate to the size of a farm, under a systematic rotation of crops, will invariably enable the farmer to guard against this contingency, and that without any loss from waste of fodder. Gorse is equally proper for use at one as at two years old, and its produce at two yearly cuttings will be found much upon a par with once cutting for two years' growth, and *vice versa*. Thus, supposing a farmer to rent 60 acres of land, and that out of this there should be 10 acres unfitted to be brought under a regular system of cultivation. These 10 acres, if under gorse, and properly managed, would afford the farmer a supply of green food for his stock, that at one year old would amount to from 100 to 150 tons, and at two years old from 160 to 280 tons, which, from the nature and habits of the plant, would not be liable to failure or to be deteriorated by any changes of weather. Though gorse will flourish upon all kinds of soils, rich or poor, wet or dry, yet it delights most in dry steep shaly soils, such as are formed by the *debris* from mountains, and found in the steep sides of hills and valleys in all mountainous districts. On cold, wet, and thin soils which appear almost unfit to support any kind of vegetation, gorse will flourish luxuriantly, provided the surface of the land be thrown up into ridges, so that the crown or top of the plant may be clear of the water. Gorse is generally grown broadcast, but drills will be found far more advantageous, as they will enable the young plants to be kept free from weeds of various kinds, which prove very prejudicial to the tender seedlings. The ground in which gorse is intended to be grown, should be made tolerably clear before sowing the seed, so as to give the young plants a fair start. It is not advisable to cut gorse the first

winter after sowing, but it should be allowed to grow at least until the second winter. After the first cutting it may be ever afterwards cut every year, or every other year, as may be deemed most advisable. As to the manner of preparing this plant for fodder, it is mown with a common scythe once or twice in the week, carted home, and laid in heaps on the barn-floor, but not ground or cut until it is to be used. If it lies unused over night few cattle will eat it. The machine used for cutting gorse is in every respect similar to that used for cutting hay or straw, the only difference being that the knives are constructed somewhat stronger than those in general use for the latter purpose. The cost of machines varies from 4*l.* to 7*l.*, and the machinery requisite to work them by horse or water power amounts to about 10*l.* more. With a hand machine a man will prepare from 12 to 15 bushels an hour, and with a horse or water power he will prepare from 40 to 60 bushels an hour, and that for eight or ten hours a day. Gorse is a heating food, and horses when overfed with it are apt to become affected with a difficulty in stoling. A little salt should therefore be mixed with the food when a great portion of it consists of gorse. Cut straw, turnips, carrots, steamed potatoes, &c., form an excellent combination with gorse, as fodder for horses and neat cattle. The quantity of seed per acre, if broad-cast, is from 4 to 6 lbs., but if in drills half of that quantity will be amply sufficient. The drills should be from eighteen inches to two feet, and two feet or a half apart, according to the nature and quality of the soil. One pound and a quarter of seed will produce a sufficient number of sets to plant an acre. The season for sowing gorse is the latter end of March, the whole of April, and first week of May."

Mr. Roberts' statements respecting gorse are fully borne out by the experience of several Welsh farmers, and also by Mr. Anderson in his *Recreations*. "The best winter food for cows," says Mr. Anderson, "that I have seen, and perhaps the very best that can be obtained in this climate, is the bruised twigs of the common furze, gorse, or whins, as it is differently called; for this food not only keeps the cows in the best condition and high health, and makes them yield as much milk as upon the top of the grass in summer, if they be kept in due temperature as to heat, but that milk is of as fine a quality, and the butter made from it as sweet in taste as the best made summer butter." The advantages of gorse cultivation are so apparent, that the sooner every farmer, who has 30 or 40 acres of bad ground in his possession, sows eight or ten of these with gorse the better. What other kind of crop can he grow on bad land that will yield a return of from ten to fifteen tons per acre of valuable fodder at so little expense? The best Dublin seed will not cost more than 1*l.* per acre. All the manure required is a top-dressing of gravel, or coal ashes, to keep down the weeds. And let him have a bed of seedlings in the garden to fill up blanks occasioned by winter's frost or summer's drought. The cultivation of gorse is every year becoming more general throughout England and Wales; and in our own country several stock farmers have begun to sow it in clumps, in particular places on hill sides, for the benefit of their sheep during a storm. I see it stated in the *Carnarvon Herald*, that in the winter of 1836-7 large quantities of gorse were sold in the vicinity of Carnarvon at the rate of from 20*l.* to 30*l.* per acre.

A FRIEND TO THE FARMER.

GRAIN, FLOUR, AND MEAL.

Return to an Order of the Honourable the House of Commons, dated February 12, 1839, for an ACCOUNT of each Description of GRAIN, and of FLOUR or MEAL, stated in Quarters, at the Rates and Proportions adopted by the Custom-house Regulations which were imported into Great Britain from Ireland, in each year, from the 5th day of January, 1800, to the 5th day of January, 1839.

Years.	Corn of Irish Growth Imported into Great Britain from Ireland.							
	Wheat and Wheat Flour.	Barley in- cluding Beer or Bigg.	Oats and Oatmeal.	Rye.	Peas.	Beans.	Malt.	Total.
	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.
1800.....	749	78	2,411	..	..	..	..	3,238
1801.....	150	..	375	..	..	..	..	525
1802.....	108,751	7,116	341,151	282	113	1,655	2,303	461,371
1803.....	61,267	12,879	266,359	753	611	1,653	25	343,547
1804.....	70,071	2,521	240,022	206	1078	3,060	..	316,958
1805.....	84,087	15,656	203,302	235	1634	2,010	..	306,924
1806.....	102,276	3,327	357,077	330	1389	2,361	..	466,760
1807.....	44,900	23,048	389,649	431	1390	3,777	..	463,195
1808.....	43,497	30,586	579,974	573	75	2,065	..	656,770
1809.....	66,944	16,619	845,783	425	38	2,669	..	932,478
1810.....	126,388	8,321	492,741	20	216	3,541	..	631,227
1811.....	147,245	2,713	275,757	21	50	4,081	..	429,867
1812.....	158,352	43,138	390,629	178	51	5,008	..	597,356
1813.....	217,154	63,560	691,498	420	77	4,455	..	977,164
1814.....	225,478	16,779	564,010	4	460	5,731	..	812,462
1815.....	189,544	27,108	597,537	207	425	6,371	..	821,192
1816.....	121,631	62,254	683,714	43	239	5,984	..	873,865
1817.....	55,481	26,766	611,117	..	12	2,275	..	695,651
1818.....	105,179	25,387	1,069,385	4	10	4,768	..	1,204,733
1819.....	153,850	20,311	789,613	2	..	3,904	..	967,680
1820.....	403,407	87,095	916,251	134	439	8,396	..	1,415,722
1821.....	569,700	82,884	1,162,249	550	2474	4,959	..	1,822,816
1822.....	463,004	22,532	569,237	353	728	7,235	..	1,063,089
1823.....	400,068	19,274	1,102,487	198	586	5,540	..	1,528,153
1824.....	356,384	44,699	1,225,085	112	756	5,791	1,173	1,634,000
1825.....	396,018	154,256	1,629,856	220	1431	11,355	10,826	2,203,962
1826.....	314,851	64,885	1,303,734	77	1452	7,190	1,203	1,693,392
1827.....	405,255	67,791	1,343,267	256	1282	10,037	572	1,828,460
1828.....	652,584	84,204	2,075,681	1424	4826	7,068	853	2,826,590
1829.....	519,017	97,140	1,673,628	568	4435	10,445	2,011	2,307,244
1830.....	529,717	189,745	1,471,252	414	2520	19,053	2,820	2,215,521
1831.....	557,498	185,409	1,655,701	515	4142	15,029	10,888	2,429,182
1832.....	790,293	123,639	2,051,867	294	1915	14,530	8,229	2,990,767
1833.....	844,211	101,767	1,762,520	166	2646	19,114	7,017	2,737,441
1834.....	779,505	217,855	1,769,503	983	2176	18,771	3,865	2,792,658
1835.....	661,776	156,242	1,822,767	614	3447	24,235	10,357	2,679,438
1836.....	598,757	184,156	2,132,138	483	2920	17,604	22,214	2,958,272
1837.....	534,465	187,473	2,274,675	1616	60	25,630	4,174	3,030,293
1838.....	542,583	156,467	2,742,807	628	5232	21,584	5,001	3,474,302

Inspector General's Office, Custom-house,
London, Feb. 26, 1839.

W. IRVINE,
Inspector General of Imports and Exports.

SHEEP IN CALIFORNIA.—The sheep in California, as well as in all the other parts of Spanish America, are of a bad breed, and their wool of the very coarsest quality: the whole seem to be exactly of the same kind. It is strange, that while in Spain the finest woolled sheep in the world—the merinos—have so long existed, an inferior breed, producing the coarsest wool, should have been carried to their colonies. Perhaps the propagation of the merinos, like the grape, was discouraged or prohibited in the Americas, in order, as was the policy of the mother country, to give the monopoly to the flocks of Estremadura, as well as to the vineyards of Catalonia. It is extraordinary, however, that some one should not have introduced into any of those vast countries a better breed, even in the time of the Spanish government; and still more extraordinary, that since the

revolutions which have removed all obstacles, no amelioration of this breed has taken place. There are large flocks of sheep in Chili; immense numbers on the table lands of Mexico which abundantly supply the capital with mutton; and myriads scattered over the middle or southern republics, all of which, as well as those of California, are of the same breed, and their wool invariably exceedingly coarse. It might be thought that in the tropical climates, the temperature and other circumstances may have changed the quality of the fleeces; but in Upper California the latitude nearly corresponds with that of Estremadura, and in some parts exactly so; yet the quality of the wool is equally bad there as in the equatorial latitudes of Peru and Colombia. The British settlements of New Holland and Van Diemen's Land correspond with the latitudes of Chili

and California. It is impossible to conceive a country more adapted to the breeding of sheep than Upper California; and if a good kind were introduced by intelligent breeders the benefit would be incalculable.

ON THE CULTIVATION OF CABBAGES AND MANGEL WURZEL.

(ORIGINAL.)

The cabbage belongs to the genus "*Brassica*," of class and order "*Tetradynanica Siliquosa*," of Linnaeus, and to the order "*Cruciformæ*," of the natural system of Jussieu. The drumheaded variety is now acknowledged to be the most useful as a field plant, not only from its hardy nature and steadiness of growth, but from its solid compact form resisting the effects of climate, and affording greater bulk and weight per acre. Some varieties called "*Brocoli*," may be cultivated, and may be as nutritious—but though they may stand closer in the drills owing to their taller and more open form, bulk is wanting and consequently the produce is very inferior in value. The plants are raised in beds from seed sown in autumn, and are ready for planting in the field in the month of May following. Cabbages are most productive on strong loamy clays that are too stiff for turnips, and the farmer consequently possesses plants suited to different soils if he allow himself to take advantage of them. The land intended to be planted with cabbages is prepared like turnip lands, ploughed in autumn, and in the spring ploughed, harrowed, and rolled and cleaned, and then drilled at intervals of thirty inches, and the manure deposited in the usual way. The plants are dibbled on the drills at about 18 inches distance, after being for a time immersed in water by the roots. Moist weather should be chosen for planting, as wet as the planters can stand, and filling up of blanks from dead plants must be attended to. So soon as weeds appear, and the land is in a suitably dry state, the small plough drawn by one horse is set to work, and during the season continues to plough the intervals, the scuffling plough provided with knives being in most cases too light for the stiffness of the soils. The hoers pass along the drills, cut small weeds, loosen the earth, and set the plants to right. If the land be wet, the double-mould board plough may be required to draw furrows to keep the land in a drier state; in other cases it may not be necessary. In some places it is customary in October to pull the outside blades, which are given to young cattle. The late Mr. Curwen cultivated cabbages extensively, and had a different method of depositing the manure beneath each plant in a square hole at the intersection of straight lines drawn lengthwise and across the field, to allow the scarifying ploughs to work in both directions. This plan is attended with more trouble, and no advantage was seen to result from it. The drill of 30 inches when rolled down differs little from the flat method of planting in every third furrow—in cases of wet soils it is preferable in keeping the manure and plants drier, and in affording an opportunity of drawing furrows by earthing up. An erroneous opinion is generally entertained that it is hurtful to plough the intervals of drills in dry weather, and to expose the soil to drought; but physiologists have determined that plants, and especially broad leaved esculents, derive much nourishment from the atmosphere, and consequently they must be much benefited by

the exhalations from newly stirred earth. I have been fully satisfied on this point from practice. In our southern dry and early climates, the land intended for cabbages, potatoes and beet, may be partly prepared in autumn, if not wholly so, and drilled up and the manure applied. A loss might be sustained from a wasting of the manure, and if the plants were inserted before winter they might be destroyed by game and other vermin. But a previous preparation of the land must be of great advantage, as it is a very general complaint that these stiffish soils cannot be got ready in the spring in due time. A late climate would at once preclude such an attempt; but in our drier latitudes it must be very advisable, and is at present practised by some few spirited cultivators. Sowing of cabbage seed on the drills in the manner of turnips has been spoken of, but not established.

An objection prevails against the cultivation of cabbages from an opinion that they exhaust the land, and require much extra encouragement, and that they give a taste to the milk and butter. In the latter case, they may be given to young cattle, and sheep, and pigs; but even when given to milch cows, experience has fully proved that if the decayed blades be carefully removed, no taste whatever will be communicated. They require clays and strong loams, but I have raised very fair crops on indifferent soils, with no more encouragement than was given to turnips, and found them more valuable than a medium crop of the latter, and I never could see any exhaustion of the land from them or potatoes. Cabbages may be laid in pits and thatched, and kept for a considerable time, though generally speaking it is advisable to use them during the earlier part of the season of winter feeding.

MANGEL WURZEL,

Is a species of the genus "*Beta*," of class and order "*Pentandria Digynia*," of Linnaeus, and of the family "*Chenopodeæ*," of the natural system. It is named by different botanists, "*Beta hybrida vulgaris*," and "*alba-rubens*," thought to be a biennial, and introduced from the continent. The red tapering variety, white inside with red streaks, is now cultivated, and a turnip rooted variety, "*Beta raposa*," has been lately tried, but the advantages, if any, are not yet established. Beet root delights in moist clayey loams, and the land is prepared, drilled, and manured similar to potatoes and turnips, and the seed sown on the top of the drills by a machine, or dibbled by hand at the distance of six or eight inches, to allow for failures of the seed and destruction by vermin. In either method of sowing immediate rolling is indispensable to secure against drought and to prevent evaporation. The scarifying plough works the intervals, and when the plants are about three or four inches in height, the hoers thin them out at the distance of a foot or sixteen inches, cutting weeds and loosening the earth all round, and these processes are repeated so long as necessary. Earthing up is not used from the encouragement it gives to the shooting of lateral fibres. In October the crop will be fit to be raised, which is performed by cutting off top and roots, and carting them in a dry state to a pit where they are piled up with the crowns outwards, and covered with straw and earth sufficient to protect them from frost. In this manner they may be kept sound and good all through winter to the latest period of feeding in April. The tops are given to cows or young cattle in a grass or stubble field, and to pigs in their yards. The seed required may be about 3 lbs. per acre, and the expense of cultivation about 7*l.* exclusive of rent and taxes, and

cabbages about the same. Potatoes will be about 2l. more, owing to the value of the seed.

We read of great crops being obtained of cabbages and beet in particular cases, but the utility of any root or plant does not consist in isolated cases, but in the quantity that is raised for general consumption. The Kohl rabi or turnip rooted cabbage, may add one more to our esculents that may be raised on soils too stiff for turnips. I never could get a crop of them, not even one plant in the field,—bares and rabbits relishing the plant so much as to devour them as soon as planted. This plant may be more fibrous and stringy, and coarser than our cultivated green crops, but its durability in resisting the effects of climate must be a great recommendation, and on strong soils it must be a useful substitute, and greatly preferable to having no roots at all for winter food. Little dependence can be placed on the results of chemical analysis, in trying to ascertain the feeding value of these crops from the quantity of nutritious matter they contain, for no two animals of the same age and breed will advance equally on the same quantity of food of any kind, nor will we find an equal weight of any kind of food to contain an equal quantity of nutritious matter. But we know that some kinds are more fattening than others, and in rather smaller quantities, and the greater the quantity that is raised of any kind suitable to the soil and climate, the greater is the quantity of animal and vegetable food raised from a given quantity of land. It is an endless attempt, in fact it is impossible, to estimate the value of these crops when consumed on the farm—the benefit to the land is great from the manuring, working and cleaning it receives, and extends over the whole rotation of subsequent cropping, and even into the next fallowing; for land that has been once properly treated never requires so much labour to be again bestowed upon it. The value of the manure obtained from cattle eating these crops in proper yards, and from sheep eating them on light lands, can hardly be calculated, and forms in our present knowledge of the art, the foundation, the very life and soul of farming. The farmer has got white and red turnips, and cabbages on light and stiffish lands for early feeding; he has got Swedes and beet on the best loams that may be used at any season; and potatoes and Kohl rabi on lighter and heavier soils, for feeding at any time; and with all these roots of established value it only remains to use to the greatest advantage, the favours and bounties of providence. On quantity the dependence must be placed; for whatever the quality may be, if a sufficient quantity be not raised to produce an effect, no general or comprehensive benefit will be derived from it. It is pitiful to see the rich loams and clays of England capable of producing these crops in great perfection, lying in many places in a state of nature, producing weeds, which are cut and made into hay, and we may expect that our modern system of draining will add considerably to our soils for green crops. Our farmers startle at the expense of green crops, and never calculate whether the increase of produce at the end of rotation will not repay that expense, making allowance for the improved state of the land,—some think they exhaust the soil, while they do not scruple to sow two or three white crops in succession, scuffling the land between the crops, evidently encouraging the growth of weeds instead of checking them, for no cleaning can be effected at that season of the year. Our cultivators, however, are not to be convinced, even by a long practice, of the benefit of the alternate system—old turf and hay they must continue in spite of reason and experience. Farmers and landowners are equally obstinate on this point,

they are shut up in the same pincfold, ignorance has fixed the lock and prejudice keeps the key; and it seems that it will require something different from the ordinary course of proceeding to move them from their confinement. Expense is required, no doubt, but what can be done without expense? every thing must be bought at a price it will repay. But it is useless to multiply words and occupy space on this subject, for with the present ideas of the agricultural world, we may with an equal chance of success, oppose a bulrush to the flowing tide, as set reason or experience, or even their own eyesight, in opposition to their prejudices.

J. D.

March 1, 1839.

ON FACTITIOUS, OR MULE-BRED ANIMALS.

SIR,—I believe it to be a fact generally admitted, that it is beyond the reach of human ability to exceed the limits prescribed by nature, by uniting two distinct species of aboriginal animals, and thereby producing a factitious one, capable of reproduction. I say of reproduction, because on this capability *alone* does the weight of my argument repose, considering it the only criterion by which actual proof can be satisfactorily established.

We must all admit that the great Author of the Universe in his unspeakable mercy and condescending goodness to gratify the wishes of his favoured created being—Man—has permitted him to indulge his desires, or to carry his researches so far as to allow the breed of a factitious or hybrid animal by one cross, but here I contend and shall endeavour to prove, the bar is fixed. “Thus far shalt thou go, but no further,” this is the extreme limit, the *ne plus ultra*, the unerring dictum of the great “I am,” from whose tribunal there is no appeal, and to which all human theories must be compared as to the small dust on the balance, for here it is evident that the superruling power maintains its pre-eminence by the infallible obstacle of rendering the produce sterile.

My first remarks shall be on the domestic Mule, an animal well known in every part of the kingdom, though I doubt whether its usefulness is so duly appreciated as its merits, though those who do employ them estimate their value. One valuable property they peculiarly possess, not observable in the generality of mongrel breeds, which is that they far exceed the natural longevity of either of their parents, frequently of both; if we compute the age of the horse to be 35, and the ass 40: many instances have been attested where the mule has attained the age of 70 and upwards, one in particular, at the iron works at Colebrook-dale, where there were three or four known to have been employed on the works upwards of 60 years. This I was assured by one of the proprietors. Another valuable quality is that they are less liable to disease, and capable of much more bodily exertion than either the horse or the ass, and being nearly as abstemious as the ass, it is reckoned of much greater value than either of them where power is wanted with economy. Of their capability of enduring bodily fatigue, I beg to adduce a few instances out of the numbers that have fallen under my notice: Messrs. Joliffe and Banks employ two or three teams of English bred mules to draw their lime from Meastram, in Surrey, into London, a distance that cannot be computed at less (taking the average of the places where they unload) than 22 miles, which is 44 miles a-day, as they go six turns in the week, commencing at one o'clock Mon-

day morning, and ending about ten on the Saturday night; that is working at least 14 hours out of the 24. The late Wm. Cobbett, when living at Botley sent his fat lambs and other farming produce to London in a caravan drawn by mules, the distance at least 62 miles, this he assured me they generally performed in ten hours, only baiting once for one hour; now I would query where are horses to be met with that could do this, they generally during the season went twice a week, and worked on the farm the intermediate days. A friend of mine (a partner in a London Porter Brewery, Taylor and Co., Rotherhithe,) some years ago, purchased six mules from his father's iron-works in Wales, neither exceeding fourteen hands; he employed them in their drays, three in each, and he assured me they drew the same load, namely, three butts, as the other teams of three horses, that they stood their work equally well and at about half the expense of keep; notwithstanding owing to their singularity of appearance they could not get suitable men that would drive them, and for no other reason they discontinued to use them; so much for prejudice. I need not say more as to their utility, though I am aware of some objections that may be urged in their disfavour; one is a quality derived doubtless from the ass, namely, an unconquerable obstinacy in resisting ill treatment, no severe usage can possibly induce a mule to go forward, when it is not inclined to do so of its own accord, though gentle and kind treatment, generally speaking, will. It would be a fortunate circumstance if all our other beasts of burden were endowed with the same kind of spirit; for, in that case the feelings of humanity would be less frequently outraged than they are at present; another objection, which is by far the most valid, is the diminutive size of the general English breed, by no means calculated to conciliate the public favour; mules being mostly bred from small mares and the English ass, in this case the progeny can never be expected to exceed the height of the ass, more than the medium between the sire and the dam. All that appears requisite to bring them into more general use is to increase their substance and height, which can only be effected by importing male Spanish asses and breeding from large sized mares, these would produce stock of sufficient power for any purpose, and I don't hesitate to say the most profitable stock that can be reared. About 40 years ago, a Mr. Eccleston, of Lancashire, adopted this plan, and I understood it succeeded, why his example was not followed I must leave—probably from the difficulty of procuring a Spanish ass. I think no other reason could operate, as no doubt, I expect, can exist as to their superior utility for carrying burdens, and also for draft, where speed is not required; at a step of six or seven miles an hour they are remarkably safe and sure-footed, seldom making a false step, but the reverse is the case when rode or driven very fast; this I have remarked in many instances, besides in two of my own, both capable of trotting twelve miles an hour, and remarkably safe for a few months at a quick pace, but they afterwards both repeatedly fell, even on excellent roads; and it could only be accounted for owing to a rigidity of the muscles of the legs communicated doubtless from the ass, an animal never designed by nature for swiftness, and therefore not furnished with elasticity of muscle similar to the horse.

In my next I purpose to hand you a descriptions of, and remarks on several different breeds of factitious or hybrid animals, and am respectfully yours,

Exeter, March 2nd, 1839. AGRICOLA.
—Flying Post.

A HINT TO LANDHOLDERS AND FARMERS.

The first and great question which is now agitating the manufacturing, mechanics, shopkeepers, and labouring poor, is how are they to procure bread for themselves and their families; and next the exorbitant demands that are now made upon them. What has brought this immense population to the hour of want and misery, is the next question; and this is caused by the tithe which increases with the improvement of the country, as no one can improve waste land without the tithe proctor pocketing the whole profits arising from it, thus keeping up a constant bickering between the parson and tenant. The second cause, is the cruel policy of laying down the land in permanent pastures, and allowing it to remain until the whole of the salts and alkalies are extracted from the soil, and the surface overrun with poisonous plants and insects, diseasing the stock by bloating them up with acrid fat. I have constantly observed, that fat animals perish in the extremes of heat and cold; the heat melting the oil, their bodies run off in a state of fusion. In cold weather the internal heat is not sufficient to prevent the condensation of the fat; and consumption of the lungs is sure to follow; and what is worse, the disease is communicated to the inhabitants. In order to demonstrate the propriety of ploughing up the old grass land, and routine cropping the soil, I will point out some remarks from the agricultural report for the year 1834, which states that there were 32,000,000 acres of land under cultivation, or capable of being cultivated; 3,250,000 acres were employed in the growth of wheat, the remainder for other crops; 6,000,000 acres of waste land; but it was stated that it was not advisable to bring the waste lands into a state of cultivation, because it was necessary to keep up the price of corn. There are 17,000,000 acres of the amount in pasture land. To convince the landholders of the practicability and necessity of adopting the routine cropping and soiling, or feeding the stock with mowing grass, I will point out the various experiments made in the county of East Lothian under the auspices of Sir John Sinclair, Arthur Young, Mr. Rainey, Dr. Anderson, and others, for the purpose of ascertaining the comparative merits of routine cropping, soiling, and pasturing husbandry. Ten acres were pastured, the animals were weighed before being put in the pasture, they gained 192 lbs. averdupoise weight per acre, per annum, of beef and mutton. Upon the supposition, that a healthy person requires one pound and a-half per day to support him, this would be consumed in 128 days. Cattle and sheep soiled on the produce of an acre of ground, yielded 400 lbs. of beef and mutton, which would maintain double the number of men that pasturing would; and soiling is a more cleanly way of feeding stock. In Belgium the process of soiling is generally adopted, and their butcher meat and butter is infinitely superior to ours; and more than double the quantity raised from the same surface of land. This land converted into tillage, three or four times the number might be fed on its produce, as will appear from the following calculation then made by three different farmers. The corn raised on such land was 48 Winchester bushels per acre, which was considered a low estimate, when we deduct four bushels for seed, six bushels for labour and horse-feed, allowing the average weight to be 400 lbs. per qr., give 1,900 lbs. weight of bread corn for the use of the people. When we estimate that one-fourth of the quantity goes for bran, pollard, and waste in the manufactory, the remainder amounts to 1,425 lbs. weight of flour, or meal to be used as bread, and other purposes, which at 3 lbs. weight per head, will supply food for 475 people for one day instead of 128. The comparison would be more striking were it extended to potatoes and other esculents, which of course would form a part of every rotation were convertible husbandry introduced. None but those who have tried it, can be sensible of the vast improvement made by routine crop-

ping. If two millions of acres of old tillage land were sown down, and the like extent of old pasture land broken up, an additional supply of not less than four millions stones of beef and mutton would thereby be thrown into the market; in short, were alternate husbandry generally exercised in Britain, two millions of people might be advantageously employed in bringing the soil to a proper state of cultivation; and have the resource of the country called into action, that are scattered over the kingdoms of England and Scotland, and particularly Ireland, so admirably calculated to rectify the worn-out soil. Provisions might be obtained to supply one hundred of millions of people, however chimerical it may appear in the eyes of landlords and farmers. I will appeal to the Jews while under the theocracy; the Romans while under the Commonwealth,—and to the county of East Lothian, in Scotland, as a proof of the correct view I have taken of the subject. Three-fourths of the soil is worn out, and the exclusive system generally followed is attended with the most pernicious effects to the public health, and most destructive to the public interest. One million of the youth ought to be at once drawn from the over-populous, cities, towns, and villages, and planted on the soil as apprentices, to be taught the art of farming, and the mechanic arts necessary to a proper system of rural economy. They would then make fine settlers to send as emigrants. I cannot close this subject without strongly urging the advantages of conjoining live stock and corn, and making them subservient to each other. Were the old pasture lands converted into tillage an immense quantity of manures would thereby be furnished for enriching the poorer soils, and for ameliorating the old tillage fields before they are laid down with grass seeds, particularly when composted with lime, salt, and new earth. Every three acres of old grass land broken up would furnish dung for one acre a-year, consequently, the ploughing up of a million acres would return dung for 330,000 acres of barren or unproductive land per annum, for three years. Afterwards, by means of composting the whole of the manure that is laid on, an additional increase of two quarters of grain per acre, and more of green crops might reasonably be expected from the manure thus afforded; while the original stock of compost, like money vested at compound interest, would accumulate and increase from year to year, till the country was improved to the greatest degree, which physical circumstances would permit.

AVERAGE PRICES OF WHEAT.

The following documents were lately presented to Parliament:—

AN ACCOUNT of the AVERAGE PRICE of WHEAT for each YEAR, commencing 1st October, 1828, to the 30th September, 1838, and of the Average from 1st October, 1838, to the present time, calculated in each case from the Weekly Averages; and also STATEMENT of the WEEKLY AVERAGE PRICE of WHEAT, struck on or nearest after the First Day of each Calendar Month, since the passing of the Act 9 Geo. IV., c. 60, down to the present time.

AVERAGE PRICE OF WHEAT FOR EACH YEAR.

Year ended Sep- tember 30..	Av. s. d.	Year ended Sep- tember 30..	Av. s. d.
1829	70 4	1835	40 7
1830	62 1	1836	43 11
1831	67 6	1837	56 5
1832	60 8	1838	59 10
1833	53 6	From Oct. 1, 1838,	
1834	48 6	to Feb. 15, 1839	74 0

WEEKLY AVERAGE PRICE OF WHEAT.

Yrs.	Weeks ended.	Ave- rage. s. d.	Yrs.	Weeks ended.	Ave- rage. s. d.
1828	1st August ..	58 10	1834	3d January ..	49 2
	5th September	61 7		7th February	48 11
	3d October ..	65 0		7th March ..	48 0
	7th November	74 3		4th April	47 3
	5th December	72 0		2d May	48 4
1829	2d January ..	75 11		6th June	46 10
	6th February	74 6		4th July	48 11
	6th March ..	66 6		1st August ..	48 4
	3d April	70 3		5th September	44 3
	1st May	69 0		3d October ..	42 9
	5th June	71 5		7th November	42 4
	3d July	68 2		5th December	41 11
	7th August ..	66 10	1835	2d January ..	40 1
	4th September	68 3		6th February	41 5
	2d October ..	60 0		6th March ..	39 10
	6th November	55 7		3d April	39 9
	4th December	57 2		1st May	38 6
1830	1st January..	55 5		5th June	39 8
	5th February	56 6		3d July	40 5
	5th March ..	59 11		7th August ..	43 2
	2d April	65 1		4th September	39 5
	7th May	66 6		2d October ..	37 1
	4th June	65 11		6th November	36 7
	2d July	68 6		4th December	36 9
	6th August ..	74 11	1836	1st January..	36 0
	3d September	66 7		5th February	39 7
	1st October ..	62 0		4th March ..	44 7
	5th November	62 3		1st April	46 5
	3d December	65 7		6th May	47 11
1831	7th January..	68 3		3d June	49 5
	4th February	73 3		1st July ...	50 8
	4th March ..	72 4		5th August ..	50 8
	1st April	72 4		2d September	48 1
	6th May	70 3		7th October ..	47 2
	3d June	66 4		4th November	51 8
	1st July	66 7		2d December	59 7
	5th August ..	65 3	1837	6th January..	59 0
	2d September	64 2		3d February.	57 5
	7th October ..	61 0		3d March	55 11
	4th November	61 3		7th April	55 11
	2d December	61 8		5th May	55 10
1832	6th January..	59 1		2d June	56 2
	3d February..	59 11		7th July ...	56 4
	2d March	58 2		4th August ..	60 1
	6th April	59 6		1st September	56 5
	4th May	62 1		6th October..	55 9
	1st June	61 9		3d November	51 7
	6th July	63 2		1st December	52 6
	3d August ..	63 5	1838	5th January..	52 4
	7th September	58 0		2d February..	55 4
	5th October..	54 7		2d March	55 3
	2d November	53 3		6th April	58 8
	7th December	54 7		4th May	60 0
1833	4th January..	52 6		1st June	63 1
	1st February	53 3		6th July	68 0
	1st March ..	52 2		3d August....	69 11
	5th April	53 10		7th September	70 2
	3d May	53 5		5th October ..	64 9
	7th June	52 10		2d November	69 5
	5th July	54 7		7th December	75 6
	2d August....	56 5	1839	4th January..	80 2
	6th September	55 1		1st February	77 0
	4th October..	52 10			
	1st November	51 7			
	6th December	49 8			

Office of Comptroller of Corn Returns,
Board of Trade, 27th Feb., 1839.

WILLIAM JACOB,
Comptroller of Corn Returns.

HOEING WHEAT.

(FROM THE TRANSACTIONS OF THE SOCIETY OF ARTS.)

The Thanks of the Society were voted to Colonel J. Le Couteur, of the Island of Jersey, for the following paper on Hoeing Wheat.

In a small work published by me, "On the Varieties, Properties, and Classification of Wheat," I state that it is of paramount importance, in order to obtain the largest amount of produce, that the seed should be pure; that is to say, of one sort or variety, in order to secure a uniform and perfect state of ripeness; for I have distinctly established, that the proper portion of farina, or meal, cannot be obtained from a crop containing a vast variety of sorts—where some, at the moment of reaping, which the farmer judges of from the largest portion being ripe, may be half ripe, some still less so, and some even in a green state.

Under such circumstances, it is impossible to expect that most corn will be ripened, or the largest portion of flour obtained from such corn, or that it will afford the greatest quantity of bread.

I am aware of the fact, that wheat should not be over ripe in order to produce most meal, but this applies equally to a pure crop; indeed more so, as more will be obtained from such than from one that is indiscriminately mixed.

This principle being admitted, I wish to bring forward some further observations, which the experience of two additional years has afforded me, relating particularly to the proper moment for hoeing wheat.

I trust that circumstances, which may appear trivial at first sight, may not be tedious to listen to; but I truly believe that the proper cultivation of wheat is yet little understood, and I feel that every advance should be developed and promulgated as speedily as possible, in order to promote the blessings derived from agriculture, and to extend knowledge: indeed, one who could keep secret any advantages proceeding from it, would little deserve either the inestimable blessings conferred by a gracious providence, or its protecting hand.

It has not been unusual to hear intelligent farmers object to hoeing wheat, because they found that it injured the growth of the plants; an objection perfectly correct, as long as they worked without a proper knowledge of the mode of growth of wheat; for they frequently did, and do still, greatly injure the crop by injudicious hoeing.

There are two sets of roots to wheat, and therefore this grain should be sown at a depth sufficient to separate their offices, which I hold to be distinct.

A grain of wheat, sown at a depth of three inches, that which I adopt, usually appears above ground, in ordinary favourable seasons, in nineteen days.

By observing the dried specimens now exhibited, it will be seen that No. 1, sown at the above depth on the 23rd of January, was, on the 25th of April or at the end of ninety-two days, still depending on its lower or terminal roots for support: it had not yet put forth the upper or coronal roots; but a small dark ring indicates the point from which they would have protruded, about one inch below the surface. This small joint between the two sets of roots is named the pipe of communication. On the 4th of May, specimen No. 2 will shew you that, in one hundred and two

days, the two coronal roots had protruded laterally about a quarter of an inch.

It seems that nature, by affording this pipe of communication between the coronal and seminal roots, clearly intended them to perform different offices; the lower set nourishing the plant from sources drawn from below, the upper ones from the influences of the atmosphere, hoeings, or top-dressings. What more beautiful and interesting provision can be found for the healthy support of a plant, so necessary to the very existence of man?

The coronal roots begin to shoot laterally in about eighty days after the plant has appeared above ground in ordinary seasons, it being impossible to fix a precise time, as allowance must be made for climate and seasons. If these coronal roots, on emerging to perform their office, find themselves in a hard dry soil, surrounded by the roots of millions of weeds; that the leaves by which the plant breathes are overwhelmed by a multitude of enemies in the form of weeds of every description, which deprive the young and tender plants of the pure atmosphere they should inhale, and probably impart to it themselves gases of qualities noxious to the wheat; it necessarily follows, that the plant cannot thrive as it should do, and that it must be checked at this period of its growth. Now, this is the precise fact. Let any observant person look to his wheat at this period; let him take up some of the plants carefully, he will perceive these coronal roots; let him observe further, he will, as the weeds advance, see his crop changing from a healthy green to a yellow sickly colour, which it may only recover when the roots have gained strength, and, in some cases, the plants have got the better of the weeds; in others, the weeds will get the mastery of the coronal roots, and the return may be a half crop, if not less. I have experienced this myself; but what is the contrary case? If, at the period that these coronal roots are just to emerge, a deep, careful, and rapid hoeing be given them, the whole of their enemies, the weeds, are checked—the roots shoot into a soil recently stirred for their reception—the plants revel in a pure atmosphere and breathe freely, besides possessing the undivided enjoyment of dews, refreshing showers, and the influences of light. The same observer will perceive the sudden and extraordinary change that will soon take place; the plants will lose their sickly hue, and they will rapidly expand, or trail along the ground.

By looking to plant 3, it will be seen that, at the end of 114 days, the coronal roots will have made considerable progress; and that, in a fortnight more, they appear greatly developed, as in plant 4. I will here call your attention to the fact, that, as the plants begin to tiller, the pipe of communication would appear to lessen in volume, dwindling, in the end, as it were, into a mere thread; the coronal roots, also, begin to develop themselves in a greater degree than the seminal roots. I consider I have demonstrated the importance of examining a few plants, in order to watch for the proper period for the first hoeing. To press it further, it may, however, be added, that though wheat, in ordinary favourable seasons, is from seventeen to nineteen days in appearing, from the period of sowing this season, owing to extreme coldness, some of my wheat, sown a week before Christmas, was forty-five days in the ground before it appeared, although it had been regularly pickled and soaked: it is proper to add, it was seed I obtained from England, and might have

been two years old, which would have retarded its growth in a slight degree. Where land is in a foul state, a second hoeing is important; but this, it is considered, should be exceedingly light and superficial, merely to skim off any weeds that may have sprung up since, or have escaped the first hoeing, in order not to cut or disturb the coronal roots which, at the end of 144 days (Specimen 5), will have extended themselves across the drills, whether of seven or nine inches. The hoe used for this purpose is of my own construction; it is in the form of a stirrup, the sides being rounded off in order to guide the workman in making his strokes rapidly: for, by this means, the round side may rub along the wheat without injuring it, and the blade being of a razor shape, and as narrow, is both strong and cutting, accumulating no soil, and meeting with little resistance; it is a pleasant and efficient instrument. If the workman steps backwards, he leaves the weeds untrodden to wither rapidly. A man can hoe four drills at each pace conveniently; and, where the land is not foul, he should hoe half an acre in a day. I frequently get the work done at so much per drill, after having ascertained the time required to hoe the first four drills, so that a just quantum of labour can be exacted, and the labourer earn more or less, according to his industry. By walking forward the labourer will execute more work, but he then treads down the weeds into the freshly stirred soil, which is also thereby considerably consolidated. This description of hoe is also strongly recommended for all sorts of drilled crops, as it enables a workman to scoop out a weed from the edge of an onion, or other plant, without incurring the risk of cutting it,—an inconvenience constantly attending the use of ordinary Dutch or other hoes, if used rapidly.

On poor soils requiring much manure, an application of diluted, recent liquid manure, will be found highly beneficial just after the first hoeing, as the young shoots will absorb a due share of nourishment from it, while, by the destruction of the weeds, the roots of most of them will afford additional food for the wheat plants.

For the same reason that it is proper to free the young plants from weeds when the coronal roots begin to shoot, I hold it to be a doubtful practice, then, to sow grass seeds.

If the ensuing fortnight be mild and moist, the young clovers and grasses will have put forth leaves, which are so many millions of mouths, breathing the atmosphere at the expense of the wheat plants, besides taking from them much nutriment.

I had a remarkable instance of this on my farm last season. A field of wheat was looking beautiful after its first hoeing, I had sown a large portion of artificial grasses over it, imagining the coronal roots would gain ground over them; but a fortnight of genial weather wrought a sad change—the little grasses came on charmingly, but the poor wheat changed into a “yellow and settled melancholy,” and never recovered itself; the ground had been so well manured that the sample proved fine, but the crop did not reach above twenty-six bushels per acre, where I should have obtained forty, and the straw was shorn of half its length.

The result was different by sowing the grass seeds at the second hoeing, which I tried in another field, a fortnight or three weeks' additional growth having enabled the coronal roots to take a firm hold of the soil; nor did the crop appear to re-

ceive a check at the period when the grass seeds developed themselves.

The produce, in this case, was only thirty-five bushels per acre; but that the grain did not suffer here is proof, by the beautiful sample, I venture to call it, of the variety *Talavera Belvatis*.

I am inclined to think it to be faulty practice at best to sow grass seeds of any description among wheats, which appear to me to require all the nourishment the soil can afford them. I am prosecuting an experiment accurately to ascertain the truth of this, which, if this paper has not proved uninteresting, I may hereafter have the honour of reporting to you.

By referring to Specimen No. 7, it will be seen that the grain having been grown superficially, or on the broad-cast system, by a neighbour, and merely lightly harrowed in, the coronal and seminal roots appear crowded together, so, as it is presumed, to identify in some sort their offices, which, by the other mode, appear to be kept separate. This is a subject for further inquiry, as no positive conclusion has been arrived at; but as far as the structure of the plant seems to be a guide, it would appear to be clear that in certain seasons, and under peculiar states of the atmosphere, this crowding of the roots must prove prejudicial. The observation is made in order to invite attention to this point, in the hope that some inquiring mind will be led to make experiments on the subject.

In the collection now on the table, amounting to about 260 varieties, or subvarieties, is a fine selection of wheats, which I received from Mr. Loudon, which I greatly value, as coming from an individual so unwearied and so distinguished for his admirable labours. They were grown by M. Vilmorin of Paris, and presented by him to Mr. Loudon; and, as a classification, illustrative of the varieties described in the “*Maison Rustique*,” are invaluable. I grew every sort last year. Some have greatly increased in size, being eight and nine inches long, two or three inches longer than their original types; but the moist weather which prevailed at the period of ripening, discoloured them so much as to destroy their beauty, and almost their resemblance to the parent.

J. LE COUTEUR.

HADDINGTON.—There was a very fine show of seed-corn and rye-grass in Haddington, for the premiums offered by the United East-Lothian Agricultural Society, the show being the largest which has yet taken place: and in consequence of the excellent quality of the seeds, the judges had very considerable difficulty in deciding the premiums, which were awarded as follow:—

- 1.—For 10 qrs. of best seed-barley (Chevalier), to Mr. Broadwood, Thurstonmains.
- 2.—For 10 qrs. best do. of any other variety, to Mr. Hume, Westbarns.
- 3.—For 10 qrs. best seed potato oats, to Mr. Brodie, Linplum.
- 4.—For 10 qrs. best seed Angus oats, to Mr. Ker, Howmuir.
- 5.—For 10 qrs. best seed early Angus oats, to Mr. Brown, Halls.
- 6.—For 10 qrs. best seed Hopetoun oats, to Mr. Hamilton, Gullade.
- 7.—For 10 qrs. best and cleanest perennial rye-grass (excluding Pace's seed), to Mr. Roughhead, Haddington.
- 8.—For 10 qrs. of do. Italian do., to Messrs. Banks and Son, Haddington.

ANSWERS TO QUERIES ON ITALIAN RYE GRASS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—We intended some time since to have forwarded the following remarks, in reply to "Queries respecting Italian Rye-grass," which appeared in your paper of the 28th Jan., but on seeing the subject so ably treated by two correspondents in the number for Feb. 25th. we at first resolved on not troubling you further, but have since been induced to forward them for your consideration and publication, should any additional information they contain be deemed of sufficient importance.

The Italian Rye-grass may be sown in spring with a crop of barley, or other grain, as practised with common rye-grass. It may be sown either with, or without a mixture of clover-seed; the former is the most commendable practice, as the weight of produce will be much greater, than if sown alone, and the vigorous habits of the Italian Rye-grass is by no means prejudicial to the growth of the young clovers. There is no danger of its getting up so high as to injure a crop of barley under ordinarily favourable circumstances; however on inferior soils, and if the barley receive a check when, or shortly after, brairding from excessive rain, or otherwise, the Italian Rye-grass will be rather more liable to preponderate, than a crop of common Rye-grass and clover; which under these circumstances not unfrequently overgrows both barley and oats. Its duration may be described as being longer than what is termed "annual" (common) rye-grass; but certainly less permanent, then the most perennial varieties of *Lolium perenne*; or generally varying from biennial to triennial. We are in the practice of recommending its introduction to the extent of 4 or 6lbs. per acre, in all mixtures of grass seed for permanent pasture, as it is highly relished by cattle, materially increases the bulk of produce in the first two seasons, and as the plants of Italian Rye-grass die out, they are replaced by the more permanent grasses in the mixtures, which come away much slower at first. It is not well adapted for sowing alone, either for hay or pasture, as from its upright habits of growth, which suits it for a nurse to clovers and grasses of comparatively weak braird, it is not calculated to form a good turf, but should in all cases be mixed with at least nearly double its weight of perennial rye-grass seeds, which quantity will produce about an equal number of plants, that by their dwarfer, and more spreading habits of growth will form a close under-crop.

The preceding remarks will be found to contain a reply to the "seventh query," namely, "that it, when mixed with others, may be advantageously grown for hay, and afterwards depastured."

The Italian Rye-grass according to Reichenbach, author of a "Flora Germanica," and other botanical works, who describes it under the name of "*Lolium Multiflorum*," "grows naturally in various parts of Switzerland, and its habitats are confined to no particular soil." It, like the common rye-grass, accommodates itself to a great variety of soils, and succeeds well in all which possessed even an ordinary degree of fertility, from the newly reclaimed peat moss to the strong alluvial carse clay, and recently consolidated sand; and we may mention that we have experienced its good effects in mixtures for shifting sands, from its rapid growth at first tending to fix the surface, and shelter the young plants of *Sand Reed* and other deep rooting grasses, which are both longer in brairding, and like all true perennials, of

comparatively slow growth. In the meadows between Edinburgh and Portobello, which are irrigated by the town sewers, it succeeds well, and materially improves the crop if resown occasionally by merely scattering its seed thinly over the wet turf; but it always presents a sickly appearance when stagnant water prevails, and therefore should not be sown on lands with retentive subsoils which have not previously been well drained.

We may mention that Mr. Thos. Bishop, at Methven Castle, Perthshire, has recently obtained a premium from the Highland and Agricultural Society of Scotland, for a report of the growth of Italian Rye-grass, and crimson clover, as a substitute for tares in summer feeding, which we understand will be published in a further coming number of the Society's transactions: having seen Mr. Bishop's crops for the past two seasons we can bear testimony to the successful results of his experiments, which were conducted on an improved moorish soil with a northerly exposure, sown down for permanent pasture, and although at the first cutting many parts of the field crop 37, averaged 4 to 5 feet in height, the young clovers, and perennial grasses suffered no apparent injury from being overgrown, but on the contrary came away more vigorously last spring, than if they had been sown with a corn crop; which may be accounted for by the less impoverishing effects the Italian Rye-grass, a *green crop* had upon the soil than a *white* or *corn crop*, combined with the superior protection afforded by its remaining green throughout the winter, and being always in a growing state, when the weather is free from frost.

We are, Sir,

Your very obedient servants,

PETER LAWSON & SON.

Seedsman to the Highland and Agricultural Society of Scotland,

Edinburgh, 8th March, 1839.

HOLLOW DRAINING.—The prizes given by the Peterborough Agricultural Society, for hollow draining, hedging, and ditching, were contested for on the 6th ultimo, on pasture land on the farm of Mr. Deacon, at Standground, when 13 candidates appeared, at nine o'clock, to compete for under-draining, and 8 for hedging and ditching. The judges were Mr. Wilders, of Chesterton; Mr. W. E. Griffin, of Werrington; and Mr. Cave, of Warmington. The method of under-draining, exhibited by four men from Melchbourne, Risely, and Titchmarsh, in the employ of Lord St. John, (new in this neighbourhood,) met with the approbation of the numerous farmers present. The width of the drain at the surface being only eight inches, and the depth two feet; in making good this drain, the green-sward turf being inverted, was wedged in the drain by the foot, leaving a sufficient space for the water; a stratum of clay was then trampled upon the turf, and the drain filled up with the refuse. The first prize was awarded to John Robins, of Riseley, Beds.; the second prize to Richard Palmer, of Woodstone, Hunts., as the best drainer with thorns; and a donation was given to Thomas Johnson of Titchmarsh, in testimony of his merit, the ground falling to his lot being very unfavourable, notwithstanding which, his skill was sufficiently apparent. The first prize for hedging and ditching was awarded to John Munns, and the second prize to Wm. Gimber, both of Glington, Northamptonshire; and a donation was made to John Brown, of Werrington, Northamptonshire, a youth only 15 years old, who exhibited skill very unusual in one of his age and strength. Lord Fitzwilliam, with his usual benevolence, presented this lad with a present. A donation was also made to Wm. Lark, of Newton, Northamptonshire, another of Lord St. John's men, for his expertness in hedging and ditch-

ing. Each unsuccessful candidate received a trifle to compensate for loss of time. Lord Fitzwilliam, the Earl of Aboyne, Lord Milton, Lord Frederick Gordon, Lieut. Col. Hardy, Leonard Thompson, Esq., the Rev. B. Simpson, the Rev. John Hopkinson, Phillip Tillard, Esq., and many other influential men, took a lively interest in the proceedings of the day, which will, unquestionably, give an additional stimulus in the neighbourhood of Peterborough, to the improvements now so actively and so generally sought after by those engaged in agricultural pursuits.

AGRICULTURAL EDUCATION.

It will be in the recollection of our readers that a few weeks since we adverted to the proposed establishment of an "Agricultural College" in Kent. Reports have since been circulated that the attempt had been abandoned in consequence of the projector not having met with that cordial support which he had anticipated. We are glad to learn that the rumour to which we allude is unfounded, and that a meeting will be held shortly at which some individuals well known in the agricultural world by their literary labours, have promised to attend and take part in the proceedings. We have upon many occasions expressed our opinions upon the importance of agricultural education, every step to forward that object is therefore hailed by us with pleasure, and we shall be happy to find that the proposition meets with sufficient support to give the experiment a fair trial. As regards the good effects on the youthful mind of a well regulated system of education in those departments of science which bear upon Agriculture we entertain not the slightest doubt, but upon the practicability of giving to the proposed institution a constitution such as will insure the harmonious working of all its parts we entertain much more serious doubts. Without in the slightest degree wishing to prejudice the proposal, we cannot refrain from stating our firm conviction that the *programme* or prospectus of the establishment, which has been circulated, will not attain the desired end. It rarely happens that the first outline of a plan is so complete as not to require alteration, we therefore hope that it will be brought before the intended meeting in an amended shape. Whilst, however, we are awaiting the result of the experiment of an Agricultural College in Kent in order to determine the propriety of multiplying such institutions to a sufficient extent to meet the wants of the agricultural class, we are neglecting most valuable means of improving agricultural education immediately accessible. Why are not steps taken by those whose deep interest it is, and who having an interest, possess also the means, to enlist the best talent of the day in compiling elementary treatises in those departments of science which are immediately connected with agriculture, as chemistry, geology, mechanics, botany, natural history, &c., such works to be immediately introduced into all those schools in which the sons of farmers are now educated? If proper means were adopted such works might be obtained, and a well directed appeal from a body of influential, well-known proprietors and occupiers of land would effect their introduction and use in every school in

the kingdom. It must be observed that when we speak of chemistry or geology we do not propose to give the farmer's son such a course of education in these branches of science, as would make him a profound chemist or geologist, but merely such a general knowledge of those subjects in connection with agriculture as will awaken his mind to their importance, and pave the way for a more extensive application of the principles of those sciences to the practice of his occupation. At an Agricultural College, upon a proper scale, he would, it is true, have the advantage of seeing the practical operations of husbandry conducted in the most approved manner, but how many thousands will there be still educated at the ordinary schools, who will from a variety of causes, never have the advantage of being sent to one of these colleges. Supposing, however, it were possible that the education of all could be completed at one of these institutions, would a youth make the less progress, or labour under greater disadvantages because he had already in his ordinary school education, acquired a partial knowledge of the subjects to which his attention would afterwards be directed. We firmly believe that no course which could be taken, would so speedily, so easily, and effectually improve the knowledge of the rising generation of farmers, as that which we have suggested. There is another most powerful means of improvement as regards agricultural knowledge applicable to those who have acquired mature age, a means which we are delighted to see daily coming into use, and which should meet with every encouragement from those who desire to diffuse knowledge amongst the farmers, we mean Farmer's Clubs. Of the value of these institutions in promoting improvement and distributing information it is impossible to give a more signal instance than in the case of the Harleston Farmer's Club, which we noticed a few weeks since, when it appeared from a discussion on the expense of keeping farm-horses that, upon farms of the same character and with horses of the same kind within a distance of five miles round the place where the club met there existed a difference of 50 per cent. in the cost of horse keep. Had one of these farmers who pursued the more expensive mode of feeding, seen it stated in an agricultural publication, that farm horses might be kept at one-half the charge his own then cost, he would most likely have sneered at the statement, and called it *book-farming*. When however he found the statement confirmed by his own neighbour, a farmer like himself, he could not fail to be convinced, and to profit by the information. These clubs are also of the highest importance as a sort of practical tribunal for determining the value and correctness of statements upon agricultural subjects. The merits and facilities of any new plan can there be discussed, arrangements for making experiments for the benefit of all, may be determined upon; and the results of experiments compared. After the result of the investigation on the keep of farm-horses by the Harleston Club great caution should, however, be exercised in rejecting any improvement suggested, although it may appear somewhat chimerical in the outset. Another and important advantage which would result from the general es-

tablishment of Farmer's Clubs, would be that they would be accredited bodies to which any information could be simultaneously conveyed, and by which any subject might be discussed and reported upon in a small space of time, thus taking the opinion of a large part of the agricultural class as it were at once. The report of the Harleston club appeared in the "Farmer's Magazine" for March, and we are empowered to state that a place in the same work will be given to reports from any other institutions of the same kind.—*Mark Lane Express.*

CORN LAWS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—If we study the general disposition and feelings of the times, we cannot fail of noticing after certain periods have elapsed, man requires an alteration to be made, whether in respect of his political relations, or in the laws affecting his social habits. This appears to be the case as regards the corn laws passed in July, 1828, and now nearly eleven years standing; a period bespeaking it to have attained a mature old age, if we judge by the number of the laws made within these eighty years, and the transgression of those laws by orders in council, &c., and leaves this law to have existed quite an average period; but without staying to inquire how the parties are likely to be balanced in the House of Commons, and surmising whether any, or no alteration will be effected this sessions, owing to the ultras of either side being so powerful; yet it becomes very certain, that if the pressure from without should continue, some alteration must be made ere long. This induces me to draw attention to the outline of a Bill brought forward in 1827, which acted as the feeler for the existing law, as perhaps it would content all parties to be received as a medium course, until its effect had been tried.

To most interested in the corn trade, it is no doubt well remembered, that the proposition supposed 60s. to be a standard price, which was to be protected by 20s. per qr. duty, and for every 1s. per qr. the price rose over 60s. the duty was to be reduced 2s. per qr., until it attained at and above 70s. when it was to be a permanent duty of 1s. per qr.

The Bill of 1827 had also a graduated descending scale, but when some of the most influential agriculturists are willing to have a permanent duty of 6s. to 10s. per qr., it will be considered by most parties that 20s. per qr. duty on 60s. per qr., will afford a sufficient protection to them being at the rate of 33½ per cent, and should the price at any time fall to what it has been a few years past, it would thus without being increased in amount, be a protection to value equal to 40 or even 50 per cent.

Would not the agriculturists as a body be willing to concede thus much, rather than have a contest of power, with a body nearly equal in the House of Commons, and of far greater weight by their concentrated sphere in which they act out of the House?

At the same time the manufacturers are too wise, not to be willing to take any concession; and when it is seen the gain in comparison with the present law is equal to 6s. 8d. (12s. 8d.) per qr. on wheat, and 3s. 7d. to 7s. 6d. per brl. on flour, on prices ranging between 60s. and 70s. per qr. on the averages, and on further reduced prices, as on 50s. per qr., the duty

will be less by 17s. 8d. per qr., they will rather have this, than not any alteration, well knowing it is always in their power to make further demands, should prices here in comparison with other countries press on the manufacturing population,—nay, it will be their duty—should this occur—that they insist on a further relaxation in their favor.

For the better understanding of the proposed alteration is inserted the scale duties both for wheat and flour, that the difference might be immediately perceived.

Averages.	Present Duty.	Proposed Duty.	Reduced by per Qr.	Flour. Present Duty.	Proposed Duty.	Reduced by per Brl.
s. s.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
70	10 8	1 0	9 8	6 5	1 0	5 5
69 to 70	13 8	2 0	11 8	8 3	1 3	7 0
68—69	16 8	4 0	12 8	10 0	2 6	7 6
67—68	18 8	6 0	12 8	11 3	3 9	7 6
66—67	20 8	8 0	12 8	12 5	5 0	7 5
65—66	21 8	10 0	11 8	13 1	6 3	6 10
64—65	22 8	12 0	10 8	13 8	7 6	6 2
63—64	23 8	14 0	9 8	14 3	8 9	5 6
62—63	24 8	16 0	8 8	14 10	10 0	4 10
61—62	25 8	18 0	7 8	15 6	11 3	4 3
60—61	26 8	20 0	6 8	16 1	12 6	3 7

The calculation for the flour in the bill of 1827 was that every barrel of flour of 196 lbs. should pay duty equal to 5 bushels of wheat weighed off 60 lbs. to the bushel, and this Mr. Editor induces me to draw your attention to the effect, that if any alteration be made in the laws relating to corn, it will afford the opportunity of your advocating with every good chance of success, the propositions you so ably handled on many former occasions, namely, a clause to obtain for the millers and bakers of this country on fair terms, the opportunity of supplying our colonies &c. with flour and biscuit.

The old methods of paying duties and affording drawbacks is open to too much deception to be thought of; the having mills and ovens under the inspection and security of the customs, for bonded corn to be ground and baked in, is both expensive and would be of very limited benefit, as few mills &c. are so placed, as to admit of their being entirely given up for the using of bonded grain and flour only, and if so done, the advantages would fall into very few person's hands; but the obtaining a certificate from the customs on the shipping of either flour or biscuit to a foreign port, under their inspection as to quality, cannot fail of being of universal application and benefit, and the use of this certificate should be, that by endorsement it might be able to release in any port of Great Britain, the quantity it shall be considered to represent in wheat; and I do not find any sums could approximate much nearer a just proportion, than for every barrel of flour of 196 lbs. so shipped should be considered as equal to the release of 5 bushels of wheat, and that every cwt. of biscuit should free 3 bushels of wheat, in both instances to be weighed off 60 lbs. to the bushel. The great difference in the weight of foreign corn fluctuating between 55 and 65 lbs. to the measured bushel, makes it more certain and accurate to allow the wheat to be introduced by weight in lieu of the flour and biscuit previously shipped.

It is obvious that as the flour and biscuit is first sent out of the country and manufactured from the home growth, it cannot be attended with the slightest injury to the agriculturists, at the same time the advantages to this country by affording the means of getting into use at any time such bonded grain, as

will not properly keep in the stores, and thereby prevent its utter destruction, would be an incalculable advantage: a still greater reason for its concession is, that thus England would at all times be open as a market for foreign wheat, even at times when the duty of 20s. per qr. might be equal to 40 or 50 per cent. on the value of the averages.

No longer should we find the violent animosity in foreign countries to the introduction of our manufactures, when we are content to receive as constant customers a portion of their agricultural produce; no longer should we have the periodical complaints among the shipping interest, when they will be able to effect freight of flour, &c. to the colonies as well as bring their produce back, besides all the increased intercourse arising from the extended mercantile transactions in corn in so many parts of Europe; with an additional advantage, that should we be visited with a year such as we have often known, in which all wheat grown in this country has been more or less sprouted, some so much so as to be unfit for human food; we shall, if we have a scale duty at no time to exceed 20s. per qr. be able to obtain enough of sound grain from abroad, to introduce and make all fit for use, when otherwise, owing to the inferior qualities depressing the averages, it would be impossible to introduce it into this country at all, thereby forcing the people on a comparatively innutritious and unwholesome food.

The great length in which I have entered on wheat induces me only to state the outlines, that barley was taken at 30s. per qr. protected by 10s. duty, and for every rise in price of 1s. per qr., 1s. 6d. duty was to be taken off until it attained 36s. when 1s. was to continue.

Oats 21s. with 7s. duty and for every 1s. per qr. rise, 1s. per qr. duty was to be reduced until it came to 1s. per qr. permanent.

Beans, Peas &c. 35s. average with 15s. duty and 1s. 6d. off for every 1s. rise in the averages until it had obtained 45s. per qr. when 1s. duty was to be continued.

If the graduated downward scale be taken away in lent corn as is proposed in wheat, the 10s. barley, 7s. oats, and 15s. per qr. for beans, &c., would be the maximum duties to be raised; duties by no means unreasonable unless the beans, &c. should be reduced to 33s. per qr. average, protected by 11s. per qr. duty, and a falling off scale of 1s. 6d. per qr. for each 1s. rise which would perhaps more justly represent the relative values of grain.

As a last reason might be assigned the gradual falling off of the duties, offer no inducement to tamper with the averages, as there can be no profit made equal to the risk run and expence incurred which is not the case in the upper portion of the present scale where 1s. per qr. increased average often reduces the duty 3s. and 4s. per qr.

Apologising for writing to this length, I remain, Sir, your obedient servant,

S. H.

Havant, Feb. 18, 1839.

THE CONSEQUENCES AND DANGER TO THE LABOURERS AND WORKING CLASSES BY THROWING OUT OF CULTIVATION ANY LARGE PROPORTION OF THE UNITED KINGDOM.

BY LEWIS KENNEDY, ESQ. "ON THE NECESSITY OF PROTECTION TO THE AGRICULTURISTS, &C."

It is endeavoured to exemplify this by a parish with which I am well acquainted, where there are 1573 acres of convertible land at 23s. per acre (on which there has been an average deduction of 20 per cent. for several years past); one-half of this is arable, and a proportion of a thin quality, and employs a population in labourers and artizans for making agricultural implements, &c., of at least 262 persons, men, women, and children, actually living in the parish. Now, the loss consequent upon throwing out of cultivation one-third of this arable land, that is, 262 acres (and it is impossible that it could be continued in cultivation without protection), would be a diminution of labour to the extent of 87 persons!! We will suppose 27 to remain for managing the land thrown out of cultivation into rough pasture, leaving 60 persons to be otherwise disposed of or employed:—explaining this by figures, it stands thus:—

Number of acres in the parish, 1573, of which half is pasture, 786 acres, and the other half is arable, viz.—
Half the parish 786 acres.

One-third of half being 262 } acres, thus become uncultivated land.

One person to three acres 87 } persons thrown-out of employment upon the one-third arable.

Supposing 27 } persons employed on the one-third, which turned into rough pasture.

Leaves 60 } persons who lose their work on the 262 acres.

It appears, therefore, if in this parish of 1573 acres 60 people are thrown out of employment, of these 12 probably will fall upon the poor's funds, and consequently be chargeable to the parish; 12 probably starved and annihilated; and 36 would be driven out to compete for work with the manufacturing classes, or contend with their already supernumary brethren upon the cultivated land of the United Kingdom, reduced by eight millions of acres!!! Thus there would be, at least, from the one-third of the arable land of the kingdom not being cultivated as at present, 1,773,680 persons thrown out of employment, and to be otherwise disposed of:—

One-fifth, or 354,736 to be supported by poor funds.

Ditto, or 354,736 to be starved, or to emigrate.

Three-fifths 1,064,308 to procure work by manufactures.

Total. 1,773,680;

Thereby lessening the number to be employed by nearly two millions, and the land cultivated by eight millions of acres! We ask, then, would not the system of free importation of corn reduce most seriously the number of hands wanted and wages? Secondly,—the farmer will have his capital reduced to value at least one-half, and his profits diminished accordingly. The luxuries in clothes, furniture, &c. which have become necessities to himself and family, must be dispensed with, and his payments to the poor, tithe, &c., and his rent, all reduced to the standard of the value of his produce, or more probably, the farm taken by the proprietor himself. Thirdly, the landlord, who, of course, must have his rent diminished, and if his incumbrances, fixed by the law of the land upon his estate, are not proportionably altered, in many instances he will have little or no income; and where it may be otherwise, he must either live wholly in the country or abroad, and give up those expensive establishments which form a great source of the business, and, consequently the riches

PROLIFIC COW.—Mr. Craighead, farmer at Coldstream parish of Drumoak, has a cow in his possession, of the Aberdeenshire breed, which has produced the extraordinary number of six calves within twenty-two months! The numerous progeny have all been good thrivers; and some of them gained prizes at the Dee-side Agricultural Society's show in July last.

of the tradesmen in the different large towns or capital. The operative and mechanic ought duly to weigh this matter, before he is hurried away headlong by a specious policy, and one most destructive to his interests; for it is clear, by the shewing of the manufacturers themselves, that their great object in the repeal of the protecting duties to the agriculturist, is, by cheapness of provisions, to obtain the power to compete more effectually with foreign markets. This can only be done by a reduction of wages to the operative classes, and who then would be the sufferers? who the gainers? Let them answer for themselves, if the working classes like to risk such a fearful expedient. Let us also ask, for what was the system continued? That a greater quantity of goods might be produced, and their gains be the larger. Let the operatives again look back, and inquire at what periods their distresses were greatest from the want of work and low prices; they will surely find those times to be in the years of cheap corn, or the following years. Let them also inquire into the condition of those countries where corn is cheap and abundant. First, does the labourer there get commensurate wages, so as to permit him to enjoy better lodging, food, or clothing, than similar artisans, operatives, or labourers, in this country, or even in Ireland? Inquiry will convince him that the contrary is the fact. It is notorious, that the labourers and artisans in those countries are the most wretchedly paid and clothed of any in Europe; it is therefore the regularity of work and good wages which are to produce his comfort and happiness, and this the writer confidently and conscientiously believes, is only to be found in a steady and continually improving home-market. Thus when compared, any other notion is trifling and delusory; as the foreign does not bear above a tenth of the trade of our home-markets; our foreign exports vary from forty to fifty millions per annum, and our home trade is computed at five or six hundred millions!

ON THE SECOND KNOWN FERTILIZER OF THE SOIL, MANURE.

(FROM BLAND'S PRINCIPLES OF AGRICULTURE.)

The manures employed to fertilize land are divisible into two kinds. The first are the mineral, the second are the vegetable and animal.

To place the argument, relative to this important part of agriculture, on a solid foundation, a few specimens of those soils that have been always esteemed by persons in their neighbourhood the best and most fertile, are laid before the reader, and comments afterwards made upon them.

First. Out of nineteen parts of an excellent wheat soil:

- 14 parts of silica, or large, small, and fine sand.
- 2 ——— lime, or carbonate of lime.
- 2 ——— alumina, or clay.
- 1 ——— vegetable and animal matter.

Second. Out of twenty-five parts of a turnip soil:

- 20 parts of silica.
- 2 ——— lime.
- 1 ——— clay.
- 2 ——— vegetable and animal matter.

Third. Out of ten parts of a fertile soil from Scotland:

- 3 parts of silica.
- 1 ——— lime.
- 5 ——— clay.
- 1 ——— vegetable and animal matter.

Fourth. Out of eight parts of a soil proper for wheat:

- 2 parts of silica.
- 3 ——— lime.
- 3 ——— clay.

These four specimens are sufficient to answer the purpose intended; for although there is no doubt as to the correctness of their analysis, since they have passed through the hands of Sir H. Davy, yet they will by no means serve to constitute a general scale of productive proportions; because a variety in the sub-soils, as well as a difference in the situation and climate, must ever defy the establishment of one only. However, the above will answer every reasonable purpose; but first, an opinion should be given as to a standard of fertile proportions which can be safely relied upon, and capable of practical adoption. It is this: to select the proportions from the best soils in the very neighbourhood of the field to be improved, where the sub-soil and situation are similarly circumstanced, and the climate the same.

On viewing the proportions of silica, lime, clay, and vegetable and animal matter in the specimens selected, we are not a little surprised at the smallness of the quantity of the vegetable proportion, which on average is only as 1 to 15½: therefore, one directly decides that the permanent fertility of soils is by no means dependent alone on the vegetable share of matter they contain. This, however, must be proved; and to do so it will be necessary to estimate the produce of fertile lands, say, for the space of four years; and it will soon be found that the vegetable proportion alone is far too small in quantity to insure such abundant crops as the following:

First year. Turnips that will fat ten sheep an acre.

Second year. Barley seven quarters; or, oats eight to ten quarters to the acre.

Third year. Beans four to six quarters to the acre; or, two good mowings of clover.

Fourth year. Wheat four to five quarters to the acre.

All this from one coat of manure of the vegetable kind, and applied at the fallow.

Now the usual coat of vegetable manure on the best regulated farms, never exceeds in general, and indeed seldom equals, all the straw even they produce; because, when an agriculturist can manure a quarter of his lands each year, that is to say, return all the straw grown on each field every four years, it is as much as he is able to accomplish; and which quantity is found, from experience, amply sufficient, when conjoined with the fallow, to raise healthy and productive crops. This being the case and the fact, the more weighty and valuable part, the corn, is sold off from the lands as food for man and beast, except what may be consumed at home, which does not more than compensate for the loss of straw by thatching, by tithe taken in kind, and by waste, which will ever unavoidably occur on every farm under even the best management.

Whence, then, does the growing corn acquire the extra and necessary supply; since, as above shown, it cannot be from the vegetable manure carted on, because that would be obtaining a greater quantity from a less, which is absurd? Is it from the materials of the soil? * Yet, how can

* Pure silica, lime, and clay, are in themselves barren; or in a state of perfect rest or balance of affinities. But when they are broken into powder, put together and well mixed with a portion of water, their respective affinities immediately become active; fermentation ensues; is capable of increase and continuance by cultivation, especially when joined with the addition and mixture of dead animal and vegetable sub-

that be? for if we were to allow it to be the case, the fertile soil must, in the course of a few centuries, be reduced in quantity, and thus deprive future generations of the means of support, which is equally absurd; being contrary not only to present facts, but to the usual providence of the Supreme Being. And as regards present facts; the best soils in former times, are now, under proper management, equally as productive, if not more so, than then. The necessary supply of food must, however, come from somewhere; consequently we must look and examine around for the source or sources; and if we do look, it must be for that which is known to be necessary to plants, is within their reach, and of a nature inexhaustible.

They are, then, as has been before shown, and here again confirmed, the rain, the dews, and the air, all of which falling upon, and entering into a pulverized and fermenting soil during the process of the fallow, and thus expelling, as has been also before stated, the stale air and stale water which has been breathed by preceding plants; as gathered flowers in a class of water on a mantel require the water to be changed every day or two, or they would droop, so a store of fresh air and fresh water, with renewed powers of fermentation, is acquired by the soil. This, likewise, takes place with fertile soils, and those in good heart, at the time a crop is growing. The fresh water, in proportion as it is absorbed by the plants, gives place immediately to fresh air, or a vacuum must ensue; therefore, these two great advantages arise whenever a shower falls, or the night's dew enters the fertile

stances, which is still facilitated and advanced, like every other chemical process, by heat.

The individual materials, silica, lime, and clay, are not decomposed, the heat to which they are subjected being insufficient; but they, by their contiguity, exert their chemical influences on each other to a certain degree, which every day's experience proves sufficient to act with the necessary chemical effect on the more easily decomposable substances of dead animals and vegetables, on air and water, as well as stimulating the energies of the roots of plants.

Fluoric acid is not found in cultivated soils; and the silex, which is detected in the straw of wheat, oats, and barley, is obtained in the easiest way by nature, that is to say, from the straw of those plants put on as manure.

EXAMPLES RELATIVE TO SILICA, ETC.

Now a piece of sugar is by itself in a quiescent state; and so is a cup of water or tea; but when the former is put into either of the latter, its solution instantly follows.

Muriatic acid and marble; sulphuric acid and spirits of turpentine; these if kept separate, would continue at perfect rest for ever, but when brought respectively together, a mutual incorporation takes place, with a complete explosion of the two latter.

Take a flint and steel, and put them into a quantity of gunpowder, the balance of their affinities will still remain undisturbed; let but one spark only be elicited from the two hard substances, and every person instantly anticipates the result.

More instances might be adduced; the above are however sufficient to prove that, notwithstanding the apparent quietude of each pure and simple compound substance, when saturated and separated, yet, how speedily their affinities are awakened into life by being brought in contact with each other, having heat, and air, and moisture as auxiliaries.

earth; and thus the rapid growth and improvement of vegetation in the growing period of the year, after every kindly shower, is accounted for. These, conjoined with the influence of the sun, the seasons, and the innate powers of growing vegetables, aided no doubt in some degree by the principles of electricity, effect the formation of corn and fruit.

Relative to the expulsion of the stale air, &c., which is so important, it is in proportion to the quantity and the general diffusion of the rain throughout the soil, and this is of course in proportion to the state of pulverization, or adhesiveness of the particles of the soil, and its nearness to the last ploughing. The strong analogy between the soil and the stomach of animals may not improperly be adduced as an illustration of the above argument. The soil does not of itself afford the means of support to the plant, but receives the food from the vegetable manure carted on, and from the rain, dews, and air; so the stomach, by the animal's industry in gathering or catching its food, merely prepares it by a decomposing process, which so far weakens the several affinities of the matter contained, as to be capable of being afterwards selected and taken up by the appropriate organization of the plant and the animal; and this is effected in proportion to the proper constitution and health of the soil, and the animal.

This constitution of the soil,* then, is of the first importance, for upon it depends the power of decomposing vegetable materials within itself, and of abstracting from the elements that come within its sphere the other requisites for the support of plants, all of which the soil retains with that gentle degree of combination which the selecting energies of vegetation are able to overcome.

Two sources, then, of food for plants are available by man†; the one, manure, carted upon the soil; the other, the surrounding elements. Both these are had recourse to by the practical husbandman, sometimes alone, as in carting on the manure or making a fallow; and sometimes conjoined, as when manuring the fallow.

Of the subject of this chapter—manures.

Of the mineral kinds, are lime‡, sand, burnt earth||, clay, marl, hedge mould, or any other of

* One mark of the proper constitution of a soil is when it neither holds moisture for too long nor too short a time, and is not easily dissolved by a shower falling upon it, so as to form a crust upon the surface impenetrable to air.

This constitution of the soil is, as has been before observed, improved, strengthened, and rendered healthy by cultivation, and by cultivation only: since manure fails of effecting that which cultivation never does. Indeed manure placed upon a field whose cultivation has been neglected, and chemical powers consequently weak, precisely resembles a full meal that is taken into a debilitated stomach, when disease and languor follow, rather than health and strength.

† In fact there are but these two sources, and which two possess the true and only food of plants; the rest of the fertility depending on the proper constitution of the soil, and requisite cultivation, to keep the same in health.

‡ Chalk, the carbonate of lime, is known to be a great improver of the constitutions of stiff clays, and hot gravels, being put on such lands in the proportion of from twenty to twenty-five cubic yards, or common cart-loads to an acre.

|| The compost of burnt earth and turf, is found

the earthy or mineral substances, which upon inspection are all easily resolvable into the three principal ingredients of soils, namely, lime, sand, and clay.

As respects the use of these mineral and earthy materials to improve soils, they can only act, in the first place, to strengthen the constitution and permanent digestive powers of the soil, by increasing the deficient proportions of either lime, sand, or clay, and in this way add to the permanent fertility. If there be no deficiency, they then can only prove of use to hasten the decay of vegetable matter, which is preserved in a strong balance of affinity by acids, and which lime has the power of neutralizing; or from the freshness occasioned to the soil by the application of those substances that have not been under the influence of growing vegetables before, at least not of corn. This fertilizing effect is however but transient, and the application of the materials oftentimes expensive. In fact this practice is precisely similar, only less effectual, to the benefit gardeners experience with their plants, when repotting them into fresh mould; and the agriculturist's cheapest and only practicable substitute, where the soil is properly constituted, is in one or two years well cultivated and vegetable-manured fallow.

Animal and vegetable manures next claim attention. These are, dead animal matter from the inhabitants of the land and sea, including bones, &c.; and the vegetable materials, of every denomination, found growing on the earth, some of which are ploughed in green*, others are partly decomposed before they are applied. But the description most generally employed, is the straw of all corn and grass, trampled down in the farm-yard by stock, and impregnated, more or less, with their excrement, which improves the strength of this kind of manure in proportion to the nature and quantity of the food given.

Soot is a manure partaking of both the animal and vegetable; being composed of ammoniacal salts, and empyreumatic oil; with a great basis of charcoal, which are readily decomposed by the action of oxygen and water. This manure is generally applied as a top dressing, but the animal and vegetable manures are always ploughed well into the soil of all arable lands, and laid on the surface of pastures.

Since the animal and vegetable manures are composed of the materials needed by growing plants, even to the very earths and salts, of which soils are said to be robbed, they must consequently afford the most valuable share of food to growing plants; but as the food, from its capability of being consumed by living vegetables, is continually diminishing, the consumption requires making up by periodical fresh applications.

Animal and vegetable manures being most generally employed for the enrichment of soils, it is

useful to inquire what changes and consequences arise when they are thus devoted.

The usual method of application of farm-yard manure, is by carting and spreading the materials on the surface of a field in an incipient state of decay, and then burying them in with the plough.

Experience proves that the decomposition of vegetable and animal manure is in proportion to the state of culture of the land to which it is given. If the field be in an exhausted state, and only one ploughing follows just to bury the manure; its decomposition, and chemical and mechanical union with the soil will be very slow, in consequence of the undestroyed strong balance of affinities of the impoverished soil.

If the previous reasoning holds good, manure so employed is in part wasted, instead of being made the most of, as it is when put early on a fallow; because the manure when buried, lies in contact for a whole year, with precisely the same surfaces of the soil, and being in lumps, its sphere of contact must be proportionally small. The consequence is, that less fermentation takes place than what ought to do, and a proportion of the manure will actually escape in gas, from its own fermentation after the saturation of the contiguous particles of the soil has been completed, and the absence of more fresh particles to arrest it. If plants are growing above it, they are injured from the apoplexy and lodging of the corn that follows, by receiving this food too readily, and not sufficiently diluted, if I may be allowed this expression. This is the reason why fish manure, or yard manure is so soon gone when put on a field to be immediately cropped, and is not cultivated previously.

Stubbles ploughed in, will remain with very little decay for a whole year in poor and half cultivated lands, from the existence of the strong balance of affinities, resulting from the exposed particles being saturated, and no new ones brought up to the sun, air, &c.; therefore, no fresh combinations or fermentation can take place. Whereas, if stubbles are ploughed in preparatory to a fallow, so as to have the benefit of several successive ploughings and harrowings, nearly, or quite the whole of the stubble will be decomposed and blended with the soil, and be rendered a valuable manure, by the reciprocal fermentation of the land and the stubble. The former, set into activity by the cultivation; the latter, from its easy decomposition soon feeling the effect of the former, when they act conjointly in their general fermentative and fertilizing process.

When a crop is to be principally benefitted by the manure laid on the field with one ploughing only, the manure should be rich, and in a forward state of decay; because its decay, when in a long state, will be unassisted by cultivation, and the affinities of the particles of the soil will be too strong in their balance to expedite the process. The manure in this case will require to be brought into that state of decay before it is applied, which will ensure its own fermentation afterwards without aid from cultivation. And then, like shavings or small wood to a nearly extinguished fire, a partial overthrow of the strong balance or affinities of the soil will be produced, and thus far restore its fertility. But when manuring in this way it is at the expense of the manure itself, by the loss that necessarily ensues whilst the heap lies fermenting in the mix-hill, in order to its being reduced to the requisite state of decay; which decay, or rather calcination, causes a portion of its best elements and quantity to be evolved to the winds. Again, when the ma-

to ensure a crop of turnips on most soils, therefore is valuable. And, there can be no question, would prove more useful than lime, where no strong acid exists.

* The ploughing in of green crops, as tares, buckwheat, or rape upon poor and distant fields, is an admirable practice; and is founded on taking the advantage, through the aid of cultivation, of those vegetables of strong and hardy natures, and obliging them to contribute the store they had collected from the elements around them, to the support, by their decay, of plants of a more useful and tender species.

nure is laid on only before the last ploughing, even if it be a fallow, and a crop then sown, the manure is found distributed in the soil more or less in lumps. The young, and perhaps delicate plants, before they reach the manure with their fibres, must be some time and during the interval many perish.* Such is the case with young turnips, which, when they do reach the manure, find the same in masses and from its very light and porous nature, not so well adapted for the roots to extract benefit from, as if blended with, or more divided in the soil.

The above circumstances lead to the conclusion, that both in the garden and in the field, the best time and manner of applying vegetable and animal manures, indeed manures of every description, is on a fallow; and to cart and spread them on the land in the autumn, winter, or spring, according to their nature and circumstances; when there will be sufficient time to mechanically mix them well with the soil, by the successive ploughings and harrowings.

The only exception that can be adduced is on stiff clayey lands, which might have the coat of manure applied at twice to keep it the more open; as once at the fallow, being half the quantity, and once between, as for beans or peas.

By the manure, or manures, being so early applied the particles of the soil are more quickly and generally divided, therefore the sooner and better able to admit the fresh air, rain, and dews; thus favouring their decomposition and union with the soil; and likewise the same of the manures, which uniting in their effects, co-operate with the plough most powerfully in the general increase of fermentation and pulverization. The thermometer will always denote an increase of temperature when inserted into the soil about three inches, after recent cultivation, and also after recent manuring; and when these are both combined, the rise in the instrument will be found proportionally the higher. Under these favourable facts, it is not to be wondered at that the long strawey manure becomes soon reduced to a short fine state, and very generally distributed by the after cultivation.

Now when any delicate seeds are sown on a field treated as proposed, they are assisted in their infant vegetation by the increased native powers of fermentation in the early manured and well pulverized soil. Their first roots have the great advantage of the necessary food being immediately contiguous to them, and in that state of delicate suspension, or balance of their affinities, that the least vegetative effort of the plants is sufficient to overthrow, and in consequence such a tilth is most favourable to their unfolding, their future vigour, and their arriving perfect at maturity.

If the reasoning employed be correct, this favorable conclusion may be drawn, that the early application of vegetable, animal, and other manures to the fallow, contributes in a multiplied degree to the fertilizing the same, by the mechanical as well as chemical assistance which they impart to the power the soil has of combining with, and decomposing air and water, with, at the same time, their pul-

verizing effects; which objects could not be gained if the manures were added only before the last ploughing, and, by this practice also, the four following points are gained. The first, considerable less loss in the manure or manures, by their fermenting in the soil, instead of in the mix-hill. The second, the soil deriving more fertility by the early application of the manures than when put on late, and at no expense. The third, the manures being carted on the land early, less loss ensues from evaporation, the sun having then less power. And the fourth, that if any kneading should take place during carting, there is time afterwards to get the better of the evil, with having the manure or manures themselves to assist the husbandman's efforts.

The application of the same kind of manure to plants or trees that are occupiers of the soil for more than one year, as hops, the artificial and natural grasses, fruit, &c., is not always advantageous, nor do the fields prove so productive as might be expected from the pains bestowed.

The advantage of variety is, greater fermentation; therefore greater benefit from the air and rains. For the same manure acts on the soil, particularly if not aided by cultivation, like the same medicine, or the same air upon the human system, which medicine or air is found to lose its best effect after a too long repetition. In fact, the soil as well as the body, becomes saturated or neutralized. This is not the case with arable land, because of the variety of the crops, to say nothing of the cultivation, particularly of the fallow which is the most powerful of all; and thus admits of the same kind of manure being applied periodically for ever with the same success.

Before the subject relating to manures is brought to a conclusion, it will be proper to observe, that an excess in manuring, particularly when put on raw for the coming crop, is as injurious as when land is poor from the want of manure. For of fertility there may be named three descriptions. As,

Extravagant fertility.

Productive fertility.

Apoplectic fertility.

The first is, when so early and rapid a decomposition takes place, that the plants thrive too fast in their youth, and then towards harvest have nearly or quite done growing, without perfecting their seeds. This is commonly known by the name of crops, being winter or spring, proud, and summer poor.

On examining the stalks and ribbons, they will be found to be covered with the fungi species, which is owing to a sudden cessation of the supply of the sap; the healthy secretions are in consequence at an end, fermentation of the juices succeeds; a gas is then formed, which bursts the vessels, and the fungi grow.

The cause of this extravagant fertility is this; that the corn was sown upon fresh or recently manured land, the land being in itself poor from previous exhaustion; the result is, that the corn receives its food directly from the manure, in the first instance, and of course in an unselected, undiluted state, instead of disengaging it from the soil, with which the particles of the manure had been lightly combined by previous good cultivation;*

* By the experience of the best gardeners, raw manure is never found so healthy for plants as when it has been digested and blended with the soil by a previous fermentation and cultivation; because the materials of the raw manure are forced, as it were, upon the plants in an unselected, undiluted, crude state; thus favouring disease, apoplexy, or extravagant fertility.

* Very many proofs might be adduced in support both by gardeners and agriculturists: for example, a field of good land was manured and sown with

for the fresh manure decays faster, and thus yields, and indeed rather forces itself upon the plants beyond what they naturally and immediately require. And being aided in its decomposition by the vegetative powers of the corn, a too rapid growth is at first brought on. Then, as the plants had been induced to commence their structure upon a large scale, by the abundance of the materials afforded them they require a proportioned greater quantity of the same materials to maintain and complete what they had begun; but from the two-fold cause of an early extravagance and large structure, they find those materials deficient at the very time when wanted the most—the forming and completing of the seed. The soil all the time from its poverty, or strong balance of affinities, effects but little towards the growth of the plants; therefore out of the two sources of fertility, namely, manure and good cultivation, the one most important, meaning the latter, having been neglected, fails of its necessary supply, and disease of the plant takes place accordingly.*

The cause of productive fertility is owing to a regular decomposition going forward within the reach of the roots of the growing plants, when food is yielded sufficiently fast to meet all their necessary demands, and continues thus from the beginning to the end, and a well matured crop is formed, yielding bright straw, a handsome plump sample, and in quantity proportioned to the native fertility of the land. This favourable result is to be attributed to the crop being able to disengage its food from the particles of the soil, with which it has been combined by a previous good cultivation and exposure, or fallow process. The beneficial consequence of which is, that the plants have to exert their own decomposing and selecting energies to obtain the food they require, and therefore take up no more than what their healthy vegetation demands; instead, as in the former case, of having their vegetation impelled on, as it were, by the too rapid and overwhelming self-decomposition of the manure.

The cause of the apoplectic fertility is owing to a

wheat, at the proper time; its appearance during winter, spring, and summer, was very strong; but when reaped at harvest, the straw was found very soft, the grain of little value and short in produce. The owner of the field was recommended to fallow it, although he himself conceived the field to be sufficiently fertile as not to require such tillage; however he had recourse to the fallow, and then sowed wheat again. The produce after the fallow treatment, amply repaid the expense, being more than six quarters upon the acre; a proof of the superiority of cultivation, over a coat of manure without it.

The process of fallowing had mixed and combined the manure with the soil, at the same time restored its chemical powers, and therefore the succeeding crop of wheat drew from its resources, now rendered healthy, in proportion as it required the food.

* Corn sown upon scarified ground, and compared with the same species grown on the same land ploughed, will be found, when examined at harvest, to have its straw considerably softer and the grain not so abundant in produce, either in weight or measure; because the plants of the corn were not so well able to effect the requisite secretions for the composition of the straw, or the quantity of all the materials to form the grain, as where the roots could penetrate the greater depth into a more recently cultivated soil, as when after the operation of the plough.

too rapid decomposition taking place throughout the growth of the plants, as is the case if a few clevels of grain happen to fall upon and take root in a dung mix-hill. The plants are seen to flourish away with uncommon vigour, as if in a state of intoxication, producing ribbon by wholesale; and if standing in masses, are soon beaten down by the winds and rain, when, the straw becoming bent, the sap is then more or less impeded in its flow through the vessels, which are already overcharged with half concocted food, forced into circulation by the too rapid decay of the manure beneath; the consequence is the bursting of some of the vessels, when a nidus is formed for the fungi species, in the form of red rust, &c., and if this corn ever ripens, a lean half formed clevel is the only produce.

REPORT OF TITHE COMMISSIONERS.

Tithe Commission, Feb. 28.

MY LORD—It is our duty to report to your Lordship the general progress of the commutations since May 1, 1838.

We have now in the office 3,498 agreements, of which 2,362 are confirmed.

If it is assumed that those not confirmed comprise, on the average, tithe equal in amount to the average tithe in those which have been confirmed, then tithe to the amount of 1,312,102*l.* 17*s.* 4*d.* has been agreed to be commuted by voluntary arrangement.

The commencement of the operation of our compulsory powers has brought us necessarily into contact with more reluctant parties, and with difficulties which did not effect our previous operations.

We are of opinion, however, that we have, on the whole, made a satisfactory commencement of the enforcement of these powers.

Districts, in which tithes have generally been taken in kind, or let on annual valuations, contain elements of struggle and irritation, from which the rest of the country is free.

Those districts are comparatively small; and after a few cases in each have been patiently heard and carefully decided, we see ground for hoping that voluntary agreements will, even in those districts, effect the greater part of the work of commutation.

Our experience has been sufficient to prove that, while voluntary agreements are made at the rate at which they are now coming in to us, the processes of apportionment consequent on these agreements, create at least as much, perhaps more employment, than can be proceeded with at once by such mappers and apportioners as have the confidence of the country.

No exertions on our part will be wanting to hasten the completion of the apportionment; but still, under these circumstances, we think it prudent, unless the progress of voluntary commutation should slacken, to confine our compulsory interference to four classes of selected cases, and we append to this report the circular* in which we have described these classes.

The returns already presented to Parliament contain the statistical details of our progress so fully, that we do not think it necessary to repeat them here.—We have the honour to be, your Lordship's most obedient and faithful servants,

WM. BLAMIRE,
T. W. BULLER,
R. JONES.

To the Right Hon. Lord John Russell, &c., &c.

* The circular here referred to appeared in the public prints at the time when it was issued.

LLANDOVERY DISTRICT AGRICULTURAL SOCIETY.

We always regard the establishment of an agricultural society as an indication of a desire to improve, manifested by those who establish it, and we reckon upon improvement as an almost certain result. We experience much satisfaction in calling attention to the first ploughing match of the "Llandovery district Agricultural Society," which took place on the 27th Feb. The society was formed at the end of the last year, and the committee and officers have lost no time in *coming into the field*. A list of prizes for cattle, to be awarded at a meeting in November next, is in circulation, and as the foundation of good husbandry, we are glad to see encouragement held out to the cultivation of turnips and the execution of draining by an offer of the following prizes:

TURNIPS AND DRAINING.

	£	s.	d.
To the subscriber who shall raise the best crop of turnips of any kind, of not less than <i>three</i> acres,—soil and situation considered .	4	0	0
To the Subscriber who shall raise the best crop of turnips of any kind, not less than <i>five</i> acres,—soil and situation considered ..	5	0	0
For the greatest number of acres (not less than <i>five</i>) drained by a Subscriber, in the year 1839, soil and situation considered ...	5	0	0
For the greatest number of acres (not less than <i>three</i>) drained by a Subscriber, in the year 1839, soil and situation considered ..	3	0	0

Whilst caring for themselves the members of this society have not forgotten to encourage the labourer by prizes for faithful services. We heartily wish success to this infant society.

On Wednesday, Feb. 27, the ploughing match of this infant society took place in a field of Mr. Prosser's, at Llwynjack, near Llandovery; the weather being extremely favourable, an immense concourse of spectators assembled from the neighbouring parishes to witness the contest, which, from its novelty and importance, seemed to attract universal attention. Seventeen ploughmen with their ploughs and teams entered the field in regular procession from Llandovery. When lots were drawn for the situations, which had been previously marked out, they proceeded to work in good earnest, and after executing their several tasks in a most satisfactory manner, the field was cleared of all persons with the exception of the Secretary of the Society: and the judges, Daniel Jones, Esq., Penybont, D. Davies, Esq., Froodvale, and Mr. R. Shute, Neuaddfach, were then called in to inspect the work. Soon afterwards about sixty of the leading gentlemen and farmers of the district adjourned to the Castle Inn, where they sat down to a most sumptuous dinner, provided for the occasion by Mr. Powell: the Rev. E. H. G. Williams, of Llwynywmood, the Society's President, in the Chair, assisted by D. Jones, Esq., jun., as Vice. When the cloth was removed several loyal and patriotic toasts were drunk, with the usual honours, after which the President announced that the successful competitors in ploughing were,—*first prize*, Daniel Rees, servant of Mr. J. Jones, Llwyndewi, Llangadock; *second prize*, Thomas Jones, servant of Henry Jones, Esq., Cynghondy, Llanfairybryn; *third prize*, Daniel Lloyd, Llwynpiod, the President's own tenant. The announcement was received with great applause, and seemed to give universal satisfaction. The President also stated that there were three others, Thomas Thomas, servant of M. Morgan, Esq., Llwyn; Thomas Rees, servant of Rev. J. Morgan, Tolrhyn; and J. Edwards, servant of Mr. Powell, Castle Inn, who, although they did not perform their work equal to those who won the prizes, yet they de-

served being noticed as being the three best ploughmen next to the successful competitors. The health of Lord Dynevor, the Patron of the Society, was drunk with heartfelt enthusiasm, which was followed by the healths of the President, Vice-President, and other officers of the society, the Mayor and Corporation of Llandovery, &c., &c., &c., which afforded an opportunity for the delivery of several excellent and interesting speeches, and the rest of the evening was spent with much hilarity and glee. The ploughmen were also provided with an excellent dinner, at the expence of the society. The judicious conduct and activity of the stewards of the day, H. Jones, Esq., Mr. J. Havard, and Mr. Powell, contributed greatly to the success of the proceedings, and were the themes of admiration. We are happy to find the funds of the society fast increasing; they already amount to 114*l.* annual subscription, and, if we may judge from such an auspicious commencement of the society's proceedings, we may augur well of its future utility and efficiency in introducing an improved system of agriculture into the upper part of Carmarthenshire.

THE BEE KEEPER'S MANUAL.

BY HENRY TAYLOR.

Groombridge, London.

This well-arranged and truly useful little work has appeared most opportunely. The period of the year is just at hand when those, who desire to have a stock of bees, should make arrangements for possessing them; and those who possess them already will feel an interest, not merely in the prospect of advantage from their industry, but also in marking the periodical return of Spring, which not only revives and invigorates the "little busy bee," but enlivens them and renews the ray of hope which the dullness of winter had clouded. Much has been written on the management of the bee, still, however, as upon many other subjects connected with rural affairs, we are far from having attained perfection. This, however, we can state, in no work which has come under our notice has the subject been treated so clearly and practically as in Taylor's Bee Keeper's Manual. We subjoin an extract especially applicable to the approaching season.

"STOCKING A HIVE, and STRENGTH OF A COLONY.—To stock a hive an early swarm should be selected, if possible, in May. On this occasion the holes at the top of it and elsewhere must be temporarily stopped till it is put up in its place, which must, without fail, be on the same evening. Should the swarm be immediately at hand, it is still better to place it at once where it is to remain, that is as soon as the bees are pretty quiet, which will be in less than half an hour.

Unless the swarm is a very large one, and particularly if a full-size pavilion or hive is used, in a good bee district, it is best to increase the numbers by uniting a second swarm to the first.*

The stronger the colony at the outset, the better the bees will work and the more prosperous it will become. I never knew a weak one do well long, and a little extra expense and trouble at first are amply rewarded by suc-

* It is not always an easy matter to estimate the strength of a swarm, the bulk is not a certain criterion, as the weather causes the bees to cluster together more or less closely. Five thousand bees are estimated to weigh a pound, but this also varies, for on swarming they are always provident enough to load themselves more or less with honey before their departure. The swarm, however, ought to weigh nearly four pounds, some have reached to six pounds, but this is rare.

ceeding years of prosperity and ultimate profit ; indeed one main feature in the collateral system is that of being enabled to retain together a greater mass of bees than on any other is possible, no more nurses are required for the brood of a large hive than a small one, consequently the proportion of working bees is increased.

The usual and most certain method of uniting swarms is as follows : In a few days, or as soon as is desired, after the first has been established, a second swarm may be put into a common hive. At night place a table in front of the one to which it is to be joined, over which spread a cloth ; by a sudden and smart stroke the bees may be displaced from the hive, and will fall on the table in a lump. Take the first hived colony and place it over them, raising it a little at bottom, when the bees below will ascend and join it, forming one family. In moving the hive, let it be done with caution, for the combs, being at present new and brittle, are otherwise apt to fall down. It is seldom that any quarrel takes place if the business be done properly. Early the next morning move the hive back to its former position ; one of the queens will be speedily deposed and all will go on quietly with redoubled strength and activity. I have tried with success, in a collateral hive, another mode of junction : on the 31st of May, 1835, I hived a swarm into the pavilion, and on the 7th of June a second one into an end box ; to the latter a temporary entrance had been provided ; the bees worked as two distinct families till the 19th of June, when each box was filled with combs ; I then took out dividers, and (borrowing a hint from Mr. Malond) substituted others of perforated zinc through which the scent of both hives passed and mixed freely, for this greatly facilitates their union ; in two days more these were withdrawn at night, and this mode of junction in a well authenticated case came to my knowledge the last year, where a supposed union of this kind was made (in an Oxford hive) after the two swarms had worked separately for three weeks, on endeavouring to remove the end box it was discovered still to remain a distinct family with its own queen, there being also one in the centre box, both colonies had worked throughout the summer from one common doorway.

In whatever way bees are united it should be done at night and not when they are at work, or destruction would ensue ; as a general rule it may be remarked that the mode the most likely to succeed is a junction made of the whole ; the temporary entrance to the side box having, previously, been closed, as well as that of the pavilion, all were shut up till the next evening.* On the succeeding morning they went to work in peace, with scarcely any loss of life, and on the 16th July both boxes were filled with honey. But I think some doubt attached is, that in which bees are suddenly blended together without space or opportunity for individual recognition, or fighting bee against bee ; and it must be done before the hive is filled with combs. But though the methods of union now pointed out may answer at the proper time, they must not be resorted to at a later stage or fatal consequences might result ; a different course must then be taken, as will appear under the head of autumnal management."

SPADE HUSBANDRY.

(FROM A CORRESPONDENT.)

Abroad travellers can hardly fail to be surprised at seeing little or no cattle in the fields, which is important, as it accounts for meat being plenty and cheap ; because the same land, by stall feeding, will support double, if not treble, the quantity of oxen, compared with those

allowed to destroy with their hoofs as much as they eat, whilst exposed to extremes of heat and cold.

When straw is thrown down in roads, as was the case in Cornwall, and is still general in open farm yards in other parts of England, the rain washes away half its best properties ; besides, the animals which tread this straw, from being chilled, require more food, whereas, if the same straw is cut up with turnip tops, mangel wurzel, leaves, and other succulent food, it makes better manure after it has gone through the process of digestion than it can do merely poached by cattle.

Another advantage from stall feeding, is that the land is not wasted in fences, as is seen in Belgium and Germany, where furrows alone divide strips of land which reach down from the villages to the road sides ; and it is from land thus economically used that we are supplied with butter, cheese, and corn which has been poured in since the late high prices have opened the English ports.

And the agricultural prosperity of Scotland is owing to the improvements effected by the stimulus given by their large premiums, which premiums are liberally thrown open to the whole of the United Kingdom, and by their itinerating agricultural book clubs.

"Let then," as Mr. Johnson says, "improvements proceed ; let science go hand in hand with the farmer ; let the Naturalist find new cultivatable vegetables, or new varieties of those already known ; let the Chemist yield his magic aid to demonstrate the best mode of promoting their growth, and the increasing the fertility of the soil ; and then, I fearlessly assert, that ten times the present inhabitants of Britain may be amply supported by the land of their birth."

As a plan has been proposed of National Education, in which learning some occupation is to form a part, might not this object be promoted, and the *salaries of masters be saved*, by each being allowed to rent from 1 to 5 acres of land, and having their scholars' services in cultivating it after twelve o'clock in return for teaching them to read, &c., till noon.

The parish clerk and schoolmaster of Javington, Sussex, is willing to teach daily, till noon, if he could but rent one acre of land.

Satisfied from the produce of the little he does rent, that half an acre would yield him 20 bushels of wheat yearly, and the other half turnips, mangel wurzel, &c., to stall feed a cow and pig, and that with the manure they would give, by changing yearly, the grain and green crops, that the produce would increase ; and there is just reprinted by H. Wright, 15, Haymarket, Hints to Dairy Farmers, by W. Cramp, who received the Board of Agriculture's medal, for the details of the management by which in the House of Correction at Lewes, he obtained a profit of upwards of 50 pounds from one cow in 1808.

And he says, though 100 fold from seed on good ground in the parable of the sower used to be thought *figurative*, from a thimble full of wheat last year, he raised 50 plants, yielding upwards of a quart, weighing two pounds, and containing 2,312 grains, that is 406 fold the seed ; he put in each grain to the depth of his finger, so it was not devoured by the fowls of the air, was not withered for the want of moisture, and being well weeded was not choked by thorns, and one plant bore 52 ears.

Schoolmasters being paid by the produce of the land they rent, would be a motive to be diligent in instructing their pupils, and farmers might be tempted to try dibbling, if children were used to the work.

"A Prebend of Ely promoted the National schoolmaster allowing the children to help their parents and serve their country in that kind of work to which their tiny fingers are better suited than those of larger growth.

And the Labourers' Magazine for March, states, Mr. — of — Norfolk, an eminent practical agriculturist and land agent, says, I do not hesitate to acknowledge that I have learnt more of farming by looking over allotments than from all the farms in the county ; for if there are 20 allotment tenants, probably not two farm alike, thus you see on the same land, the same

* A difficulty sometimes occurs when it is necessary to confine bees or drive them into the hive, as the alighting board is often covered with them in an evening, and the numbers are increased on the least alarm. In this case take a small watering pot and gently sprinkle the board and entrance, when the bees, mistaking this for rain, will all retire inside ;

season, land farmed in a variety of ways, which cannot be done on a farm.

And season has so much to do with produce, an equally satisfactory result on a farm could not be had in many years.

Thus school land might form experimental farms all over England; and the most authentic and valuable information be obtained, if the masters were directed to keep daily accounts of work and produce.

Copying which, might form a writing exercise for their pupils, to be examined by the annual visitors from the central school.

And little capital for commencing would be required, besides the purchase of prongs, hoes, dibblers, and rakes for the children, and an empty cask to keep them in, in the school-room, which cask used there, would save both *flails and thrashing floor*, for more sheaves need not be brought in than could be cleared of the grain before night with a sack to put the seed in, which when full might be drawn in a hand cart to the mill by the boys; and this cart would serve to take out the solid manure, and by slinging under it a barrel, liquid manure also, to give to the turnips, potatoes, mangel wurzel plants, &c., and perhaps nothing more would be wanting than a machine to cut by hand the roots and straw for the cow, pails for milking, and a churn for making the butter.

And if girls were taught to milk, &c., it might tempt great farmers to keep more cows than they have of late done, and give them the profit of supplying the butter and cheese now brought from abroad.

And small premiums between neighbouring schoolmasters, awarded by the resident clergymen, might prove the *capabilities of the soil all over England*.—And Dr. Yellowly says:—

Spade husbandry is not a system of expense or risk. Less capital is necessary for it than ordinary husbandry, from the smaller number of horses and implements required, while the advantages are speedily exhibited. Its tendency is to diminish the poor rates, and thus to aid materially the operation of the new poor laws; while at the same time, it raises the amount of the labourers remuneration, and makes it dependent on steady habits of industry.

By turning up or loosening the ground five or six inches deeper than the plough, which does not ordinarily act on more than three or four inches of soil, there is an opportunity afforded for the descent and diffusion of the roots, which are often interrupted in their progress by a hard and impervious substratum; and with regard to wheat, I have had an opportunity of observing, that the number and length of the roots are much more considerable in forked than in ploughed land; and the continual addition of decomposed vegetable matter afforded by a succession of rooty fibrils, must effect a great and permanent improvement in its productive power.

It may perhaps be thought that to lay down the plough, and employ in its stead the spade, or fork, is to reject an important mechanical invention, and to take a step backward in human improvement. But it is not always that the highest power is the most convenient of application; and there are various examples, in which the more simple description of labour, may sometimes be advantageously substituted for the more complex. For example, the *dibbling of wheat* has very much superseded broadcasting in several counties, owing to the saving of seed, which pays the difference of expense, and the produce being rendered more certain and more considerable.

The plough is indeed a clumsy and imperfect instrument, quite inadequate to preparing the ground for effective planting, whether of vines, forest trees, or shrubs, which require the soil to be not only dug, but trenched, in order to allow room for the roots to diffuse themselves in it. No gardener would think of planting potatoes, carrots, or cabbages in ploughed land if he could get it dug, for the difference of produce far more than compensates the difference of the expense.

As an additional encouragement to his workmen, Mr. Mitchell allows eight of them a comfortable cottage, and a garden of about a quarter of an acre of ground, at a fair rent; they value the accommodation very much,

and I saw very luxuriant crops of wheat, barley, and beans on their little allotments.

In several parts of Norfolk spade husbandry has been adopted; and I had an opportunity early last year, of witnessing a very auspicious example of the practice, on the part of Mr. Gedney, a very able and experienced agriculturist, at Redenhall, near Harleston, where he farms about 300 acres. Mr. Gedney's trials were so encouraging, that he augmented his quantity of forked land, in the autumn of last year, from about 18 to 50 acres, on which he has grown luxuriant crops of wheat, barley, peas, beans, carrots, beet-root, turnips, and potatoes, and he pays from 1½d. to 3d. or 2l. per acre for digging to the depth of from seven or eight to twelve inches, and ridging it, by which the subsoil has the benefit of the sun and frost, to powder it before it mixes with the vegetable mould, which it would for a time injure if clay was at first laid level over it.

Mr. Gedney also observes, that the pressure of the plough in moist weather, "frequently glazes the bottom of the furrows," and thus prevents the passing off of the water, the retention of which, "in the mould which is intended for the reception of the seed, on heavy soils, is too frequently succeeded by scanty crops, more especially when sown with barley." Deep forking he considers as peculiarly well adapted to barley after tares, by bringing up "fresh soil" for the young clover plants.

"This shows with what facility spade husbandry may be accommodated to the various states of demand for agricultural labour, and how subservient it may be made by improving the soil, and increasing its productive powers, both to public and private advantage."

If it were stated, that by a very slight change of employment, a very important benefit might at once be conferred on the whole mass of agricultural labourers contained in it, gentlemen would naturally enough look for the announcement of some visionary and Utopian project. But if to this were to be added, that the scheme involved neither public levy, nor private contribution; that it would have a strong tendency to improve the morals and elevate the character of the cottager and his family; while, at the same time, without interfering with his usual occupations, or taking him to a new and distant place of abode, it would be the means of providing him with a cottage, rent free, or furnishing him with the means of procuring one, there would be little difficulty in forming a conception of the mode in which a notification, apparently so wild and extravagant, would be received. And yet, what is the fact with regard to cottage gardens? A labourer pays the full rent, or even much more than the full rent for a quarter of an acre of ground, which in this way produces a gain rather than a loss to the owner. His garden acts as a saving bank for labour, by securing the immediate employment of small portions of time, which would otherwise escape imperceptibly from the grasp, like his savings, when not placed, as soon as made, beyond the risk and temptation of being used needlessly and improvidently.

"And the good Bishop of Bath and Wells, says, allotment tenants obtain produce to the amount of from 16l. to 20l. per acre," which is also the case in Sussex.

CELEBRATED OAKS.—The oldest oak in England is supposed to be the Parliament oak (so called from the tradition of Edward the First holding a parliament under its branches), in Clipstone Park, belonging to the Duke of Portland; this park being also the most ancient in the island: it was a park before the conquest, and was seized as such by the Conqueror. The tree is supposed to be 1500 years old. The tallest oak in England was the property of the same nobleman: it was called the *Duke's walking-stick*; was higher than Westminster Abbey; and stood till of late years. The largest oak in England is the Calthorpe oak, Yorkshire; it measures seventy-eight feet in circumference where the trunk meets the ground. The *Three-Shire oak*, at Worksop, was so called from covering parts of the counties of York, Nottingham and Derby. It had the greatest expanse of any recorded in this island, dropping over 777 square yards. The most

productive oak was that of Gelonos, in Monmouthshire, felled in 1810. Its bark brought 200*l.*, and its timber 670*l.* In the mansion of Tredegar Park, Monmouthshire, there is said to be a room forty-two feet long and twenty-seven feet broad, the floor and wainscot of which were the produce of a single oak tree grown on the estate.

ON DIBBLING WHEAT.

(FROM A CORRESPONDENT.)

After reading in the *Mark Lane Express* of the 11th March, an account of the "Javington school-master" upon planting of wheat, I would beg to give you a few ideas upon the benefit of planting and transplanting wheat and other grain.

Few people are aware what may be done in this way, but those who have tried the experiments must be convinced.

I am of opinion, there need not be a poor man, woman, nor child unemployed who are able to work in the kingdom if people, I mean farmers, would attend to these little matters.

To say there is a shameful waste of seed corn in England every season needs no proof, but to say one-third of the seed usually sown is quite sufficient is a subject worth consideration. I have seen 10 acres of poor heath sands sown with less than 10 bushels of seed, and the produce was from 35 to 40 bushels per acre. I have also seen wheat sown broad-cast the roots taken up and transplanted nine inches from row to row, and nine inches from plant to plant upon the same poor sand, and from 40 to 60 ears growing from each root. I have transplanted winter barley same distance as the above, and the weakest produced 40 ears, and the best 59. I have tried rye and oats in the same way with the same results, and am persuaded that if farmers would attend to this way of farming we should want but little corn from other countries. But farmers, (not all of them however) are too wise to be taught, they (differing almost from all other people) suppose what their fathers did must be right, and all the new fine fancies as they call them, they despise, and are quite willing to live and die as wise as their forefathers. But there are to be found among farmers a good many who differ from the above, and who are quite willing to try experiments for improving the soil, and I am firmly of opinion, now in this great agricultural country farming is only in its infancy.

But it has been said these experiments of dibbling corn, and transplanting, may be done to profit in a small, but cannot in a large way. Why not? I would ask. If one acre by dibbling can be seeded by one bushel, (which is full too much), why cannot a hundred acres be done upon the same plan, by which, in the first instance 150 bushels of wheat would be saved, and as the process is simple a man and three little children would plant an acre in two days, and we have plenty of spare men and children. But I see Mr. Hitchens has invented a machine for doing it, and which deposits the manure at the same time, so that now there can be no objection, and the price if done by hand is only from 7*s.* 6*d.* to 9*s.* 6*d.* per acre, and the saving in seed when low will cover their expense; and there is another advantage when wheat or other grain is dibbled in nine-inch rows, it can be kept clean by hoeing, each of which is equal to a

shower of rain. But I am of opinion, if corn were put in even thinner than nine inches, say even 11 inches from row to row, the produce would still be greater,—if the land was broken up properly, and the surface water (which is the bane of all land) was taken away, and draining may now (since the Marquess of Tweeddale's invention for making tiles) be done at a very moderate expense, say about 6*l.* 10*s.* per acre, and the increase of crop will fully pay all expenses the first year. I have seen land in the north which before draining yielded only about four sacks, after draining yielded 14 sacks to the acre; then drain your land first and then plough, dress, and you need not fear a crop. Still although the benefits are so great by draining and deep ploughing, yet 'tis but little acted upon yet in the south, while in Scotland both south and west 'tis carried on with great spirit, and farmers are getting rich, and landlords are doubling the value of their estates, merely by this one thing. Then couple draining, deep ploughing, and dibbling corn together, and our country would be an exporting instead of an importing country. Few people except those who have seen it, can judge of the benefit of draining; clay lands whether springy or not, must be improved by draining off the surface water, for wherever that is allowed to stand within a foot of the top, your corn cannot come to perfection, and more especially so in damp summers. In Hampshire, Wiltshire, and Berks, you see farmers the whole of the winter going some of them from six to eight miles with four big horses, a man and a boy for three tons of chalk, which is a day's work, which cannot be less than a guinea expense, and if you ask them what this chalk is to do for their land, they say it acts as a "sweetener" by which I suppose they mean when pulverized by frost, it drains off some of the surface water and makes the land more friable, for chalk naturally expands by frost, so it leaves the land more hollow. But then look at the expense, one waggon load of chalk will cover but a small portion of land, say you put six loads upon an acre which is quite little enough, and you have a whole week employed four horses, man and boy, which cannot be less than six guineas, the same time would have drained the acre properly, and then your land is sweet for ever!! and chalk be it remembered can never take the water away,—no 'tis a benefit no doubt, but does not go to the root of the evil. Clay land properly drained by patent tiles, will benefit the land for ever, and then plough as deep as you please, do not fear to go into it, the deeper you go the heavier will be your crop. If any one would notice the corn upon the middle of the land, how strong and very different it looks to that on the sides of the furrows, he must be convinced of the benefit of getting rid of superfluous water,—and there is no effectual way but by cutting drains about two feet six inches deep, and laying in good hard burnt tiles upon *soles*, which if properly done will last for ever,—'tis strange that farmers can walk over their land from year to year, and yet not be convinced what is required to make their land fruitful; but I believe there are many who are even now foolish enough to suppose draining would injure their lands, while others who would do it have been kept from it from the excessive high price of tiles, and at the same time are so bad, but Lord Tweeddale's invention has removed this obstacle out of the way, by making them so much better and cheaper, that it's now within the reach of any person, and he that is wise will not hesitate, but set to work at once, being well assured he will reap largely by so doing.

A FARMER.

AGRICULTURAL REPORTS.

BASSETLAW.—NOTTINGHAMSHIRE.

During the last six weeks, the weather generally, has been exceedingly variable, though the major part thereof, partook more of the severe than otherwise. Between two and three weeks, the ground was covered with snow, but the past week has made a complete clearance, and the temperature is at present somewhat higher than it usually ranges during the ides of March. In looking around us, the fact meets us in every direction, that corn-stacks are more numerous by far, than was anticipated when the harvest was completed. This fact arises from two sources; first, the farmers, (notwithstanding the advice given them in the *Mark Lane Express*,) refused to press the bulk of their produce on the market, in the hope of realising more money as the coming harvest approached. And this delusion was kept, by rumours, the most strange and delusive; such, as that the quantity of corn in the country, did not amount to more than six months' consumption—that ten millions of quarters of foreign wheat would be wanted to make up the deficiency—that there was no corn abroad to be exported, and that where a small superabundance did exist, the government of those fortunate countries, would prohibit its leaving their own shores—that America, instead of furnishing us with a supply of flour and corn, would want all she could collect from every part of the globe. These, and similar rumours, raised and kept up by interested parties, to suit their own purposes, operated very materially on the minds of many of our principal agriculturists to such an extent, as to prevent a proper supply being brought to the market, and thus the prices continued to range higher and higher, while the duty was being reduced to its lowest rate, when the quantity of foreign in bond, was thrown on the market; the British farmer was thus, to a certain extent, defrauded of his right which was reaped most abundantly by the speculators in the produce of foreign countries. At present the growing wheats are generally looking healthy, although upon many of the low cold soils, its colour is not very good; still it is admitted, that appearances are tenfold better this spring, than they were at the same period last year. With respect to our corn markets, they have latterly been governed a good deal by the state of the London and Wakefield markets, although the supply has been more liberal than in several of the adjoining markets. When the new year set in, such was the supply of turnips, that it was expected many could not be consumed, but the late rough and stormy weather has dissipated that idea, and although no want will be known, still there will be none to spare. Perhaps one reason why they are not now so plentiful, is, that large breadths have been prematurely consumed, in order that the land might be sown with wheat. Previous to the setting in of the late severe weather, bean dibbling had proceeded to a very considerable extent, and the farmers are at present busily engaged in preparing the turnip land for the reception of barley. The lambing season is about half over, and the crop of lambs is reported to be fully an average one. It must however be admitted, that great fatality has been prevalent amongst the breeding ewes, and many farmers have been sufferers to an extent altogether unprecedented in this neighbourhood for very many years. Amongst fat sheep also, there has been great losses, but not to such an extent as those we have just alluded to. The hop market is in a remarkably passive state at present, and we are not aware of any circumstance which can resuscitate it, until something can be known of the ensuing crop.—March 20.

CAMBRIDGESHIRE.

The early sown wheat is still looking well, although not so vigorous, as it was in its appearance, previous to the sharp wind frosts which visited us about five or six weeks since, and which lasted for several days,

unaccompanied by any snow to protect it; but although it has a rusty appearance, it probably will not prove at all injurious to the forthcoming crop. Some of the latter sown wheat is looking weak and sickly, principally owing, it is supposed, to the above-named cause, as up to that time, it was looking remarkably well and healthy. Spring sowing of all descriptions of corn, is very backward; much of the land intended for beans and peas, still remains unfinished, in consequence of the very unsettled state of the weather during the last month, and which is also the case with the oat land; the barley sowing has scarcely commenced, and what little is done, has not been put in under very favourable circumstances; the weather still continues unsettled, consequently it is supposed, it will prove to be one of the worst seasons for sowing this grain, that has been experienced for many years, particularly as the spring is far advanced, and great anxiety will be felt for its completion. Turnips are getting scarce and dear; sheep in general have done very badly where they have been confined to the fold, in short they cannot have done well any where, the weather having been so very unfavourable for them. Great losses have been experienced in many flocks, both with ewes and lambs, and there is a general complaint of a short crop of the latter, there having been but a small number of twins to make up losses. Our corn markets have greatly receded in value within these last few weeks, owing, doubtless, to the agitation of the corn law question, than from any other reason that can be assigned.—March 22.

KINCARDINESHIRE.

The weather since our last has been favourable for carting out dung, but otherwise for ploughing—a department of farming operations which is considerably in arrear. The sowing of beans commenced about the 2nd current in some of the earliest districts; but, in general, the soil has not yet been in a proper state for receiving the seed. The fallow wheats and young grasses look well, but much of the wheat sown after potatoes is barely visible above ground. The corn markets have been well supplied through the month, and the stack-yards are diminishing fast. The price of barley has advanced in course of the last fortnight; and were the quantity in the hands of the farmers to be taken as a criterion for supplying the distiller and brewer until next harvest, there is little prospect of the rate receding much for some months. In all likelihood, the value of grain will fluctuate considerably through the summer; but if there be any truth in reports, neither the quantity of our own or foreign growth which may be thrown on the market, can lead us to suppose that corn will be cheap until something is known of the next crop. Turnips are disappearing fast, and a great number of heifer beasts have been forced on the market, which has caused a dull sale. In general, fat stock, particularly sheep, have brought remunerating prices; and so far this has been fortunate for some farmers who had little corn to sell and their seed to purchase. Prime fat has sold readily at 6s. to 6s. 3d. per imp. stone, sinking offals; and a large number of fine animals from this county have been transmitted to the London, Glasgow, and Edinburgh markets, in the course of the month. Notwithstanding the advanced period of the year, and the arrears of field labour, the horse markets have been dull, and prices considerably lower than expected. The agitation regarding the corn laws appears to be dying away, even among those who were most clamorous for their repeal. Never was a greater delusion endeavoured to be palmed upon the public than the doctrine of a free trade in corn as a panacea for all our evils; and it is equally absurd to imagine that any human law can regulate the value of food. Farmers should not depend on the legislature for relief in seasons of distress, neither should the labourer believe that wages cannot be affected by the price of corn.—March 6.

GENERAL AGRICULTURAL REPORT FOR MARCH.

The weather of this month has been exceedingly favourable, in most, if not all, parts of the kingdom, to agricultural affairs in general, notwithstanding that very few cold northerly winds have been experienced, and that the most severe frosts have not produced ice of any thickness, they have proved sufficiently seasonable to prevent the growing wheat, and, indeed, all other grain plants which have appeared above ground from becoming either spindly or winter-proud. Judging from the extended breadth of land under wheat, this season, and the strong and otherwise healthy appearance of the winter sown wheat, there is every probability of the approaching growth of that description of corn being by far more extensive than has been the case for a series of years past. In some of the southern and western districts, more rain has fallen than in the northern and midland counties, accounts having reached us that some of the low lands, in Sussex and Essex have proved in too wet a state to revive their spring seed furrow; whilst in Lincolnshire, Leicestershire and Norfolk, even the wettest soils, which are, in some years, hardly fit to be sown before the middle or latter end of April, have not, with very few trifling exceptions, been too wet for that important purpose. With respect to tillage, we are happy to learn that it is in a forward state—the comparative mildness of the weather, during the whole of the winter, having enabled the farmers to continue out-door labours without any material obstruction. Most of the spring crops on the uplands, are already sown; whilst the tenderest of the lowland soils may be considered in nearly a fit state for the reception of the seed. The ravages of the insect, has not been so great as from the extreme mildness of the weather might have been reasonably anticipated; whilst the pastures are tolerably luxuriant; but there appears to have been a large quantity of turnips consumed by the fattening stock in our great breeding districts. However, it is considered that all kinds of both dry and succulent food usually given to beasts and sheep are at the present time, to be found in by far larger quantities on most farms than has been remembered by the oldest grazier—it being well known that the turnip crop has been superior both in quantity and quality, to that of the preceding year. Hence, a great benefit has accrued to stock masters, who have had more difficulties to surmount in bringing their cattle to perfection than usual. The yearning of the ewe flocks, both on the South downs of Sussex and in others of our great flock districts has, as yet, gone on favourably, and a large number of very superior lambs, from the former county, has been offered for sale in the London market, though the principal supply exhibited at it, is mostly, at this season, derived from the Isle of Wight, where an unusually extensive breadth of land has been laid down, of late years, as pastures for the breeding of sheep and lambs, which description of economy appears to answer the expectation of the graziers tolerably well. The total number of lambs received in the metropolis, from the above quarter, since the lambing season has commenced, is about 900—at least a moiety of which have been purchased, by some Scotch dealers for shipment to the Edinburgh market, at which mart, lambs, owing to the backwardness of the season in even the most southern parts of Scotland, produce in the months of March and April, very high rates. During the next month it is considered that upwards of 7,000 lambs will arrive from the Isle of Wight—that being about the number received last season.

In Scotland, every thing relative to out-door agricultural labour, is going on favourably, but there is still a great deficiency in the yield of wheat and barley; which descriptions of grain are selling, in the whole of the markets, at high prices, owing to the very limited supplies brought forward. Those wheat plants which have appeared above ground manifest a promising appearance; whilst they have withstood the winter's frosts extremely well. In some of the most southern parts of Scotland, the sowing of spring corn is rapidly proceeded with; whilst it has commenced in partial instances, in some of the northern districts.

From Ireland, the accounts which have reached us have been very gratifying; whilst it is intimated that additional tracts of land have been sown with wheat. No complaints, if we make a few exceptions, have arisen respecting the yield either of wheat, barley, or oats, which are selling at tolerably remunerative prices. A large portion of last year's potatoe crop is still in the hands of the growers, which is a very important circumstance, proving, as it undoubtedly does, the abundance of that grown last season.

Our fat stock markets have been tolerably well, but not heavily, supplied with both beasts and sheep, which have met a sluggish sale, at but little variation in their value.

The following is a statement and comparison of the supplies and prices of fat stock exhibited and sold in Smithfield Cattle Market, in the course of the month.

The supplies of beasts have amounted to 11,041; of sheep and lambs, to 100,491; of calves, to 720; and of pigs, to 2,450

The prices of beef have ranged from 2s. to 4s. 6d.; of mutton, 3s. to 5s. 2d.; of lamb, 6s. to 7s.; of veal, 4s. 4d. to 5s. 10d.; and of pork, 4s. to 5s. 2d. per 8lbs. to sink the offal.

About 2,200 of the Scots and homebreds, forming the above supplies, have been received from Norfolk; 400 Scots, runts, and Devons, from Suffolk; 100 Scots, runts, and Devons, from Essex; 170 Scots, runts, and Devons from Cambridgeshire; 1,500 short-horns, from Lincolnshire; 900, short-horns and Devons, from Leicestershire; 500 Devons, runts, and short-horns from Northamptonshire; 600 oxen, runts, Devons, Herefords, and Irish beasts, from Warwickshire and Oxfordshire; 1,000 Devons and Herefords, from Devonshire and Herefordshire; 750 Scots, by sea, from Scotland; 100 oxen, runts, and Devons, from Sussex; 60 Devons, cows, and runts, from Surrey; 70 cows, runts, Devons, and Herefords, from Kent. The remainder of the bullock supply came chiefly from the neighbourhood of London.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, March 26, 1838, and Monday, March 25, 1839.

	March 26, 1838.		March 25, 1839.	
	s. d.	s. d.	s. d.	s. d.
Coarse & inferior Beasts	2 2	to 2 4	.. 2 2	to 2 2
Second quality do.	2 6	3 0	.. 2 4	2 8
Prime large Oxen, ...	3 4	3 8	.. 3 0	3 8
Prime Scots, &c.	4 0	4 4	.. 3 10	4 2
Coarse & inferior Sheep	3 4	3 6	.. 3 8	4 0
Second quality do.	3 8	3 10	.. 4 2	4 6
Prime coarse woolled do.	4 2	4 6	.. 4 8	5 0
Prime Southdown do..	4 8	5 0	.. 5 0	5 2
Lambs	6 6	7 0	.. 6 0	7 0
Large coarse Calves ..	4 4	5 0	.. 4 4	4 10
Prime small ditto.	5 4	5 6	.. 5 4	5 10
Large Hogs.....	3 2	3 8	.. 4 0	4 8
Neat small Porkers ..	4 8	5 2	.. 5 0	5 2

SUPPLIES.

March 26, 1838. March 25, 1839.

Beasts.....	2,840	3,349
Sheep	24,220	19,720
Calves.....	140	145
Pigs.....	630	700

By the above comparison, it appears, that the supply of Monday, March 26, 1838, embraced 509 beasts, 5 calves, and 70 Pigs less; 4,500 Sheep and Lambs more than that of Monday, March 25, 1839.

The general quality of both beasts and sheep exhibited for sale has been very superior, whilst the prices have ruled tolerably remunerative.

A large quantity of slaughtered meat, has reached Newgate and Leadenhall Carcass Markets, for sale, it consisting of 500 carcasses of beef; 9,000 do. of mutton; 9,500 do. of veal; and 10,000 do. of pork; mostly from Scotland and the north and west of England.

GARDENING OPERATIONS FOR APRIL.

Melon and cucumber beds must be carefully watched, the declining heat must be renewed by the aid of fresh linings to prevent the thermometer falling below 70 deg., during sunshine the mercury may be allowed to rise to 85 deg. or even 90 deg. with air, shade the plants from a scorching sun with a thin mat but remove the shading as soon as the danger is past that they may have the benefit of as much light as possible. Add a little fresh mould to the hills as often as the roots appear on the surface, and let the shoots be regularly pegged down as they extend. Attend to the impregnation of the female with the farina of the male flowers, and thin out all superfluous leaves and shoots. If the plants are infested with thrips, or green fly, recourse must be had to fumigation. Water liberally every two or three days or rather as often as the plants require it. Sow a few more seeds to produce plants to be ridged out about the end of the month under hand-glasses; continue to protect at night with mats, &c.

Maintain a steady temperature in the fruiting pine-stove, in clear sunny weather admit air freely to prevent the thermometer exceeding 85 deg., the heat of the bed at the bottom of the pots should not be less than 80 or 85 deg., water plentifully, not once or twice a week, but as often as the plants are dry; syringe occasionally over head in clear weather, and steam the house morning and evening. Shift succession pine plants if not done last month, give air daily and water when dry.

If the fruit in the vinery be now fairly set, let the leaves and branches be abundantly supplied with water from the syringe or engine once or twice a day, prune, regulate and tie in the young shoots as they advance and maintain a steady uniform temperature of 75 deg.

Admit air freely to the peach-house to prevent the thermometer exceeding 65 deg. with sun-heat, and keep up the fires at night to prevent the mercury falling below 55°; the daily application of the syringe is indispensable to keep down that fearful enemy the red spider; the green fly too must be narrowly watched and smoked to death on his first appearance. Divest the trees of all superfluous wood by disbudding, leave only such shoots as can be easily laid in without crowding. The thinning out of the fruit to a regular and fair crop, should be performed as soon as the stones are fairly formed.

Keep up a succession of rhubarb, sea kale, asparagus, strawberries, and kidney beans.

The greenhouse and conservatory should now be kept in the highest order, climbers should be neatly trained, and tied in as they extend in growth; shift such plants as require larger pots, destroy all insects as they appear, water as often as dry, and give air liberally.

Propagate the different species of stove and greenhouse plants by seeds, cuttings, layers, grafts, and the various modes of inarching, and herbaceous plants, dahlias, &c., by seeds, rooted offsets, cullings or dividing the roots.

Plant hardy evergreens any time in the course of the month, and plant, dress and repair box, and other edgings. Herbaceous plants of all kinds may still be planted.

Sow tender and half-hardy annuals on a moderate hot bed, and hardy sorts in the open borders.

Protect auriculas from heavy rains and cutting winds, let them have plenty of air, and supply them carefully with water at their roots.

Let the beds and borders in the flower garden be stirred with the hoe, and raked so as to give the whole a neat appearance; gravel walks should be repaired where necessary, and put in good order for the season. Mow, sweep and roll grass walks and lawns.

Where new lawns are to be laid down, prepare the ground by digging, levelling, and thoroughly clearing of all root weeds, let the surface be level and of an uniform consistency, take advantage of the first calm dry day, to sow with the proper permanent lawn grass seeds at the rate of four bushels per acre; rake the seeds in evenly, and roll down with a heavy roller. The above method of laying down a lawn you will find to be more economical, expeditious, and satisfactory than the common method of turfing, provided due attention be paid to the selection of the proper lawn seeds.

Now is a favourable season for grafting all sorts of fruit and ornamental trees; stake newly planted fruit trees to prevent their being blown about by the wind, and protect them from the ravages of game, &c., and water occasionally in dry weather. Protect the blossom of wall fruit trees from frost.

Sow peas, beans, spinage, lettuces and turnips for succession about the beginning, middle and end of the month. Savoys, cabbages, cauliflowers, brocolis, Brussels sprouts, borecole and kidney beans, the beginning and end, and salsafy, scorzonera, skirrets and sea-kale about the middle of the month, and radishes, and small salading once a week. Sow full crops of beets, carrots, and parsnips. Leeks and onions may still be sown if not done last month. Sow on a slight hot-bed, capsicums, tomatoes and basil, and on a warm border nasturtiums, chervil, dill, fennel, thyme, savory, marjoram, and all sorts of aromatic, medical and pot-herbs.

Plant potatoes, asparagus, sea-kale, rhubarb, mint and tarragon, and transplant cauliflowers, cabbages, lettuces, celery, and Cape brocoli. Earth up peas, beans, cauliflowers, and cabbages. Keep the hoe and rake going in dry weather.

J. T.

SHEEP.—The number of sheep in Prussia in 1834 was 12,500,000, being an increase since 1831 of $7\frac{1}{2}$ per cent. in the superior quality. There had been an increase in the best of one-fifth; in the second quality of one-tenth; whilst there had been a falling off in the common varieties; and there had been an increase of $22\frac{1}{2}$ per cent. in the Merinos. The estimated number in Great Britain and Ireland was 32 millions.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

KENMORE GREAT MARKET.—Those who came from places adjacent or more distant, in order to transact business, complained that it was somewhat flat in every department. In the horse market, the show exhibited was not extensive, and generally of an inferior description; the buyers few, and consequently the demand limited; the prices offered, and submitted to, low. Good draught horses, three and four years old, fit for the middle class of tenantry in any of the surrounding districts, fetched only from eight pounds to eight guineas, and inferior beasts lower in proportion. Fourteen pounds only were offered for the very top of the market.

WORCESTER FAIR.—This fair on Monday was not so well supplied with stock as we had anticipated; this may be attributed to two causes, viz., the alteration of the day for holding the same, and also the inclemency of the weather; by the latter, many persons were prevented sending fat sheep (shorn on purpose) and also couples; as regards the former cause, we cannot help regretting that the exertions of the cattle market committee in giving publicity to the fairs have been materially frustrated by the list of fairs attached to some of the almanacks not being corrected. The quality of the stock produced was very superior. The next fair will take place on Monday, April 8th. The following were the numbers of stock, &c., in the fair:—Beasts, 393; Calves, 72; Sheep and Lambs, 644; Pigs, 84; Horses, 113.

LINCOLN FAT STOCK MARKET.—The supply of sheep was large; buyers were scarce, and a decline of 2s. per head upon last market was submitted to, several pens were turned out unsold. The supply of beasts was fair, and prices somewhat lower than at late markets. A small quantity were taken away without finding purchasers.

At **LEOMINSTER** there was a very fine show of cattle, and a large attendance of buyers, many from the vicinity of London; the sales of all kinds of animals were very brisk, and steers, particularly fine animals, were in great request at good prices; fat cattle averaged 6½d. per lb.; sheep went from 8d. to 8½d. per lb.; good horses commanded fair prices.

At **ROSS** fat sheep met a ready sale at 7½d. to 8d. per lb., store sheep also sold at high prices, very few being offered for sale; the fair was thinly supplied with fat and store cattle, which sold from 6d. to 6½d., and stores at higher prices than at late fairs. There was a very ready sale for horses, both for riding and harness, which went at advanced prices.

At **BRECON** the sale of horses was exceedingly dull, although there was an unusually small number offered. Beasts sold remarkably well, fat ones fetched 6d. per lb., and stores were in good demand. Sheep fetched full 7d.

NORTHUMBERLAND AGRICULTURAL SOCIETY.—The competition for the prizes awarded to the best ploughmen by the Northumberland Agricultural Society, took place on the 19th ult., in a field at Styford High Barns, of fine soil and a level surface, well calculated for the purpose. The number of competitors (only 17), was smaller than was expected, owing to the uncertainty that prevailed on account of the weather, the snow having only left the ground during the previous day and night. The scene however was an animated one, a great many spectators being on the ground, and the horses employed in the ploughs exhibiting an excellent specimen of that description of stock in the district of the Tyne, for which it has been long distinguished. The arrangements were admirably conducted by Messrs. Harbottle and Hunt, who have undertaken the office of local secretaries for the southern division of the county; and the prizes were awarded after mature inspection and deliberation, by Mr. Stephenson, of Throckley; Mr. Armstrong, of The Bush; and Mr. Harle, of Mill Hills, all gentlemen of experience and judgment in such matters, in the following order:—5l. to John Makepeace, servant to Mr. Lead-

bitter, of Brock Bushes; 3l. to John Calder, servant to Messrs. Atkinson, of Peepy, and 2l. to Robt. Johnson, also servant to Messrs. Atkinson, and a youth of 19. A certain portion of land, amounting to nearly half an acre, was previously set out for each plough. They all started at once on a signal being given, and the time occupied, as well as the manner of doing the work, was taken into account by the judges. And it is only fair to say that, besides those to whom the prizes were most satisfactorily awarded, there were many very good workmen in the field, and that in general the performance was most creditable. We understand that at the conclusion of the meeting, the farmers present, being well satisfied of the utility of such competition in exciting an emulation to excel among their ploughmen, entered into a subscription to continue a similar trial of skill annually in their own district.—Mr. Nairn, of Warren Mills, at his ploughing day on Wednesday, on entering the farm of Budle, had about 150 ploughs; after the ploughing was finished, his friends, to the number of between 50 and 60, partook of a sumptuous entertainment, provided for them in a commodious apartment formed in Warren Mills by the piling of sacks of flour.

AGRICULTURAL OPERATIONS IN CAITHNESS.—Furrow draining has commenced here at a great rate; it is an excellent system for deep damp land, but will not supersede the old plan of cutting out springs. We are doing alternate furrows; it takes about two cart loads of broken stones to the chain. The cost of cutting, quarrying, breaking, and filling, is about 2s. 6d. per chain. The metal (which passes through a two inch ring) is shot from the carts through a *harp*, into the drains, the small stuff being laid on the top for blinding. The drains are half filled; they are 30 inches deep, 14 wide at the top, and six at the bottom. We have had very inconstant weather, and labour is behind. A few bere, however, are sown. Our crop has turned out better than was expected; our oats made 42lbs. weight, and our bere 50lbs. Oatmeal was selling a few weeks ago at 25s.; it is now 22s. but will soon be up again. Potatoes are scarce at 20s. per boll of four herring barrels. Stock does well. We are scarce of turnips, and are getting some oil-cake. The sheep got on admirably in the sheds, which is the best system of management for us.—*Dumfries Herald*.

HEREFORDSHIRE CATTLE.—The sale of the celebrated stock of white-faced Herefords, the property of J. D. Kedward, of Westhide, Esq., took place a short time since, under the direction of Mr. Thomas Cooke; and perhaps a more gratifying scene to the agriculturist, scarcely ever presented itself than that of witnessing the anxiety which prevailed in the company, every one seeming most anxious to touch the flesh of the different animals for sale. At the commencement it was soon manifest there was no lack of bidders; greater competition for every lot was scarcely ever seen. Neighbour against neighbour, brother against brother, all wishing to possess a portion of the blood of the celebrated bull Cotmore (the winner of the premium at our show on Monday last, for the best aged bull), the property of Mr. Edward Jefferies, of the Grove, who kindly permitted him to be shown at the sale, being the sire of the young stock, and to whose care and judgment, with a few others who remembered the Howton, Huntington, Thinghill, Breinton, and Stretton breeds, this class of the county animals have been kept together, forming now, as it were, a new era from that old school, when their wide white horns and noses were decorated with the cake and garland o'er the wassail bowl, when the wooden can, filled with good old cider went round to the toast of the rustic distich,

“Here’s to thee Benbow and thy white horn;
And God send thy master a good crop of corn.”

But to return to the merits of the animals for sale. We could not help witnessing the surprise of all who ob-

served a barren, or rather a fat cow, bred by Mr. Edwards, of the Day House, kept for that purpose since August last only, on grass, hay, and turnips, and although her weight is now almost incredible, still from her great activity, it is understood she is to be spared to luxuriate for another summer under the auspices of her purchaser, Mr. Hodges, of Wharton. The Countess cow and calf, and yearling heifer, exhibited as extra stock on our late agricultural show day, sold as follows: the cow, 80*l.*; the yearling heifer, 40*l.*; the calf, 40*l.* This cow was bred by Mr. Turner, of Noke; Mr. Yeomans, of Wellington, purchased her; Mr. Davies, the heifer, and Mr. Adams, Marden, the calf. A heifer, not two years old, with a calf under three weeks, fetched 81*l.* bought by Mr. C. A. Mason; a real Huntingdon, with bull calf, ten days old, sold for 79*l.* bought by the Rev. — Smythies, of the Lynch, and Mr. Cooke, of Lyde. This cow was bred by Mr. Jones, Breinton, and excited great attention. A bull calf, ten months old, by Cotmore, sold for 80*l.*, and every lot offered met with a ready sale, the cows averaging upwards of 30*l.* each throughout.

The sheep and pig stock, on the second day, went off with the same spirited competition, some of the latter realizing 5*l.* each, under six months old, shewing clearly that attention to breeding is most essential to a profitable return, and also the great importance it is to the county the distribution of so many beautiful and well-bred animals. The principal purchasers were the tenant farmers of the county, with very few exceptions. Among the company we recognized the President of the Northamptonshire Agricultural Society; Rev. — Smythies, Mr. Jeffries, Mr. Mason, Mr. Moore, Newton—Mr. Yeomans, Mr. Turner, Mr. Jones, Mr. Adams, Mr. Hewer, Mr. Joliffe, Mr. Coke, Lyde—Mr. Tunstall, of Burlton—Mr. Hill, Mr. Morris, Mr. Racster, Mr. Gravenor, Mr. Cother, Mr. Hodges, Wharton—Mr. Chamberlain, Messrs. Lloyd, Langford and Williams, from the Principality of Wales—Mr. Trinder, Mr. T. Price—the Stewards of Sir R. Price—Sir J. Astley, and several hundreds of highly respectable yeomen, who departed well pleased with the hospitality of the owner.

REVIEW OF THE CORN TRADE DURING THE MONTH OF MARCH.

The uncertainty of the corn trade has been long proverbial, and nothing can better exemplify this fact than the debates which occurred in Parliament last month, on the subject of the corn laws. In both Houses considerable talent was displayed during the discussion, and yet not one solitary new argument, for or against these laws, was introduced, either by the supporters of the political economists, or by those who take a deeper interest in the prosperity of agricultural pursuits at home. Statements, which for many years have decorated book-stalls in the streets, and calculations respecting consumption which have no solid foundation, and which consequently have long since been considered valueless, were most liberally either quoted, or produced as something original, by various speakers against these laws, but they were too well known previously without the walls of the Houses of Parliament to produce any impression there of the slightest importance. The fact is that all discussions on a subject so extensive as the corn trade is, are perfectly futile, and any attempt to reduce the value of grain to a fixed medium, is as much in contradiction to reason as any effort would be considered, if it were made, to fix the currents in the firmament. The value of all the necessities, and of many of the luxuries of life, can alone be regulated by the seasons, and no human law can by any possibility alter or avert the great laws of nature. Since last harvest the uncertainty of the prices of grain has been most amply illustrated, and the opinions of those most deeply conversant in the corn trade, which were so liberally promulgated in the public press, have proved in their result any thing but accurate or satisfactory. Circumstances since then have fully established that the deficiency in last year's growth of wheat was much more serious than the importers of foreign grain at that time even anticipated, and extensive as that defalcation undoubtedly has been, still the foreign supplies of wheat have so prodigiously exceeded all calculations made respecting their amount previously, that in no immaterial degree has this deficiency been made good from this source already. In this respect the corn laws, although generally admitted not to be sufficiently protective to the agricultural home interest, have during this corn season, been signally

beneficial to the community at large, and in contradicting all the theoretical doctrines of the political economists respecting the decreased growth of grain abroad, occasioned by the exclusion of the foreign growers from British markets of consumption, established a most important truth, of which the advocates of British interests no doubt will avail themselves in future, should the repeal of these laws ever again come under public discussion. The experience of this corn season proves beyond contradiction that any deficiency which may hereafter occur in our growth of grain at home, can always be most amply made good by the surplus growth of foreign nations, and consequently that the slight degree of protection which the corn laws extend to the cultivators of the soil at home, can under no circumstances be injurious to any order of society within the United Kingdom. Last autumn the alarmists without any hesitation asserted that one half million of quarters of foreign wheat could not be found in Europe for British consumption over the quantity then in bond, and yet already three times that quantity has been imported, and should it be required that amount may be yet doubled before any part of the next harvest can be brought forward into consumption. Prices are therefore kept moderate to the great body of consumers, and in fact the home producers of wheat are the only sufferers, in so far as the prices which they obtain for their crops, by no means make up to them the losses which they incur, as well by the quantity as by the quality of last year's produce. Little short of three millions of quarters of foreign wheat probably will, during this corn season, have come into consumption in this country.

The experience which we have had of the corn laws during the last six months of considerable difficulty, has however been of the highest importance, in as far as it has for ever put to rest the only argument, which the modern political economists could produce against them, for they have now been in full operation for nearly one dozen of years, and so far from their consequences having been a reduction in the quantities of grain grown abroad, the quantity of wheat imported during the current corn season from abroad, is considerably larger than it ever has been during any previous season in the history of

the corn trade. This objection to them, therefore, must entirely disappear in all future discussions on the corn question, and, with it, every tangible argument against them; for that of low priced provisions being advantageous to the manufacturer, every day's experience entirely contradicts. In France and Belgium the necessities of life are abundantly cheap, but the means of payment are restricted in a proportionable degree, and the consequence very naturally is, that not one year passes without some degree of commercial and manufacturing distress being experienced and loudly complained of by the productive classes of society in these kingdoms. The cause of this is the limited means of payment which too cheap living from necessity occasions amongst the great body of consumers, and were the prices of living in Great Britain reduced below their natural level, similar effects would follow. There is not one solitary instance, during the last and present centuries, of commerce or manufactures flourishing when agriculture was labouring under depression, indeed a memorable instance to the contrary occurred within the last twenty years. Of the metallic currency bill, which came into operation in 1822, it is not our province to speak, and whether it was necessary or not we shall at present give no opinion. The very prospect of it, however, before it came into operation, produced, what the manufacturers now so loudly demand, cheap provisions, the reduction in the value of agricultural property having, from 1819 to 1821, been far greater in proportion, than the advance which it occasioned in the value of the circulating medium was. Commerce and manufactures ought then to have flourished, had this advantage depended on depressed prices of the necessities of life. Great hopes were excited, and the memorable prosperity year arrived. The reduction of the national debt itself was calculated upon, and limit could not, for a while, be placed to the fond anticipations of the monied, commercial, and manufacturing classes. The destruction of agriculture however, was at the same period silently, but effectively, working amongst the people, and gradually producing consequences the most fatal to society in general. Not only did the wages of labour decline with the value of the necessities of life, but a vast channel for the consumption of manufactures and of every article of industry and of commerce was closed against the labour and enterprise of the productive classes of society. The reduced means of payment amongst all ranks and orders, whose incomes depended on agricultural pursuits, did in a far more extensive degree reduce the home consumption of every article of manufacture and of trade, and universal distress followed. Even the monied interest itself, although the altered value of the currency increased their property betwixt thirty and forty per cent., came in for their full share of the general suffering, and the Bank of England again re-issued one pound notes. This national calamity originated in agricultural depression, nor had it any remedy, until that important and vital interest was again righted by the alterations which were made in the corn laws eleven years ago. Since then, it is beyond all contradiction, that this empire, in no previous period, was ever so prosperous, nor was the population generally ever more contented than it is at the present time. No doubt a most mischievous attempt has latterly been made by a part of the public press to inflame the people against the corn laws, but the memory of the past still remains, and this almost insane attempt to disturb the industry of the country has been turned generally into ridicule. All who are old enough to remember the period to which we have now alluded, have learned wisdom by too

dearly purchased experience, and the younger branches of the industrious are taught knowledge on this subject by their seniors in years. The people in fact are contented with things as they find them at present. Wages generally in trade are good, and the markets sufficiently remunerate the labours of industry. To improve his state in society is the object of every body, but few are inclined to sacrifice present certainties to the delusive prospects of the theorist. The repeal of the corn laws would not only renew general distress, but would likewise be attended by still greater calamities. Every person now is perfectly satisfied that agricultural produce, for the general good, must increase in amount with the increase of population, and this certainly cannot be done unless the capital, talent and industry embarked in agricultural pursuits be protected against the competition in our own markets of foreign agriculturists. The science of agriculture can as yet scarcely be said to have risen from its infancy. During its minority it requires encouragement, else it cannot be expected to reach that degree of perfection, which no doubt it eventually must do, if strictly guarded by salutary regulations. The progress already made is no doubt great, but much more may yet be done, and the entire population receive the advantages, which must follow every description of agricultural improvement. This is by far the greatest and most important interest in this flourishing empire, and, as we have repeatedly demonstrated, on its prosperity depends that of the commercial, manufacturing, and shipping interests. That perhaps, even in a shorter period than is generally anticipated, we may increase our foreign trade by the exportation to more southern climates of the surplus of our agricultural produce is by no means improbable, indeed should tillage in Ireland only keep pace with that in Great Britain for a few years, this future advantage may be considered as certain. This will open additional channels for the extension of our foreign trade of much greater national importance, and of far more value, than that plan now propounded of increasing the exportation of manufactured goods by an increased importation of foreign grain ever can do. This is the only real way for rendering the prices of grain as steady as the elements will permit, the exportation of the surplus under such circumstances rendering greater supplies than the actual consumption required impossible. Ireland, we may say, entirely, and a considerable portion of Great Britain are open to great agricultural improvements, and the same quantity of labour expended on the same quantity of land may yet double the present produce, and eventually give productive employment, either in commerce, fishing, or in manufactures, to a much more dense population than we at present possess. The whole of the people of Ireland, under the protection of salutary corn laws, must soon find abundance of employment in improving their own island, and thus they will likewise improve the value of wages in Great Britain. Many millions of acres may be converted in Ireland from a state of perfect nature into most productive corn and grazing fields, increasing the happiness and intelligence there in proportion to the increase of agricultural improvement. But with an entirely free corn trade these prospects cannot by any possibility be ever realized. The present corn season has clearly demonstrated that, when occasion requires the sacrifice, abundance of foreign grain can at all times be found, even with the protection of the corn laws, to supply, in no inconsiderable degree, any deficiency which may arise in our home-growth, and therefore the only real question now is whether, by the repeal of these laws, we are to encourage an in-

creased growth of grain, and an improved system of tillage abroad, or by maintaining them as they are, we are to act justly towards the cultivators of British and Irish fields. It is now placed beyond all doubt that by their repeal our grain markets of consumption, under any circumstances, will be so perfectly overwhelmed with foreign supplies of every description, that the tillage of our own fields must annually and gradually decay, and with this altered state of things, the most important interest in the country—that interest which is now worth from three to four thousand millions sterling—that interest on which chiefly depends the prosperity of the manufacturing and commercial classes—and certainly a great part of the annual national revenue—will speedily sink into perfect insignificance, and a period must soon afterwards be put to the greatness of the British Empire. These laws give not any undue advantage to our own agriculture; indeed the protection afforded by them to it, is not, in many cases, so extensive as commercial laws extend to many departments of trade and manufactures. The shipping interest is thoroughly protected against any possibility of interference on the part of foreign flags. The trade of distillation is protected by duties so extremely onerous, that they defeat the object for which they are intended, and lead to an immense extent of smuggling, which is the real foundation at present of every crime. The cotton, woollen, and silk manufactures, are likewise protected by duties varying from twenty to fifty per cent., and the trade of fishing is so perfectly exclusive, that the use of foreign-caught fish is entirely prohibited in our markets. The trade of producing corn, however,—for it too is a trade, and requires capital, talent, and knowledge, to conduct it successfully—it is the fashion now amongst Modern Philosophers to assert, ought to support itself without any legal protection for the purposes of reducing the value of the necessaries of life, and with it, the value of wages, and the means of paying for the industry of a numerous body of the people of the United Kingdom. The clamour, however, against land-proprietors and farmers is rapidly subsiding, and must entirely disappear, when this important subject is better understood amongst the people in general. The period is certainly not very distant when better and more national principles will prevail, and then to protect our home institutions of every description, and to improve them, will be considered the best system of political economy; for most assuredly, to depend on foreign states for supplies of the necessaries of life, and for markets for the consumption of our manufacturing and mining industry, is not the best way possible to render a people happy, and a nation great.

During the month of March our markets generally have been very badly supplied with wheat of British growth; indeed, so very limited have the supplies in this way been that, deficient as the last crop was, we can scarcely permit ourselves to believe that this circumstance has arisen from actual want of agricultural produce amongst the British growers of wheat. We know, from good authority, that in the home districts and counties, from whence London, at all events, in the general run of seasons, is chiefly supplied, a considerable portion of the last year's crop has not yet been brought to market; and we are the more surprised at this circumstance when we reflect that the prices obtained for wheat, since the turn of the year, have been sufficiently good for the interests of the cultivators of the counties which surround the metropolis. In them it has generally been understood that no great deficiency at all events existed, either in the quantity, or in the quality of

last year's growth of any description of agricultural produce. It was in the North of the Humber, in several of the grain districts in the West of England, in the whole of Scotland, and in a considerable part of Ireland, that the damages done to the last crop were principally experienced, and the deficiency occasioned by this unfortunate state of things, has heretofore been chiefly made good by grain of foreign production, and has opened markets for the consumption of foreign wheat to a far greater extent than the most sanguine of its importers could have reasonably anticipated. This has given encouragement to the foreign speculator, and to the foreign importer, and consequently the arrivals already have been much more numerous than could naturally have been expected, and the orders sent abroad for farther purchases must eventually increase the quantity of foreign wheat in the country beyond all calculation, particularly as the season approaches when the ports and rivers in the Baltic and in the North of Europe will be again opened to the navigator. From the Baltic in particular, should our prices continue to give encouragement to the speculator, a large quantity, of the best qualities too, may most reasonably be looked for before the next crop at home can be brought into consumption, and from the Mediterranean and from the southern states of Europe large shipments are already known to be on the passage, and others of equal magnitude will follow during the remainder of the season. The demand, however, does not fall away in consequence of high prices. On the contrary, the wages of labour generally are fully equal to the value of all the necessaries of life, and there consequently is not any decrease in the consumption of them. The reduction of prices, during the last month, has not been so considerable as, from the abundance of the foreign supplies of wheat, might have been expected, not having exceeded 5s. per qr. on the finest qualities, and from that to 10s. per qr. on other descriptions. Had the usual coast supply been received during the same period the markets generally, throughout the United Kingdom, would have assumed an aspect which would, at all events, very much have damped the ardour of those who are now so deeply engaged in the foreign corn trade, and might have saved them eventually from heavy losses, which may attend their speculations. It is not possible, however, to form any opinion respecting the future value of wheat in our markets; for, as we have already said, the corn trade is far too extensive to admit of any accurate calculations being made, particularly at this time of the year, of the probable amount of supply, or of prices, which of course depend entirely on the supply being more or less than the demand. In the mean time no complaints have latterly been made of the decay of manufactures, nor of any decrease in the general prosperity of commerce. On the contrary, various indications exist of trade generally being in a highly flourishing condition. The true proof of this fact is in the rate of wages at present received by all the industrious classes of society, which are quite as high as they have been of late years. Amongst them no complaints of want of employment are heard, nor in any part of the United Kingdom are any gatherings of the people at present made for the purpose of demanding food or work. Under these circumstances therefore we may, with much safety, infer that, at all events, no decrease in the consumption of the necessaries and of many of the luxuries of life will occur during the remainder of this corn season, and any alteration in prices, therefore, which may arise during the same period, must entirely depend on our future supplies of

wheat. That the arrivals from abroad will be large is universally admitted, but some estimation can at all events be formed of the extent of their influence in our large markets of consumption, but of the probable amount of the home supply not any calculation can be made, on which any reliance can be placed, and on it mainly depends the great question respecting the value of wheat, whether it will be higher or lower, or continue stationary, until the prospects of the next crop begin to attract the general attention of the public.

The markets generally have latterly been largely supplied with barley of our home growth, but the state of the wheat trade has rendered the application to meal purposes of large quantities of barley absolutely necessary, and this article has consequently continued to command high prices, and the supplies of it have been generally cleared away as soon as they have come into the market. The very satisfactory state of the country, at the present moment, has caused a large consumption of malt, and this too has, in no inconsiderable degree, tended to maintain the high value of barley, and to increase the revenue during the current quarter. It is very generally understood that the malt duty during this quarter is larger, considerably, than it was during the corresponding one for last year, which, considering the high price of the raw material is the more wonderful, and clearly shews that the unfortunate state of last year's wheat crop, by creating high prices, has not, in any sensible degree, reduced the means of payment amongst the great body of consumers. It almost creates melancholy to reflect on the important advantages, which are yearly sacrificed at the shrine of superabundant taxation. The malt duty is one of those evils, and although the remedy is as obvious as its application is easy, and not dangerous in any manner to the revenue of the Empire, still the Chancellor of the Exchequer, or rather the legislature permits this greatest of nuisances to cripple the industry of the country, and to limit the cultivation of barley in many soils, incapable of any other description of agricultural production. The weight of the duty also is injurious in the extreme to the purposes of revenue, for which it was imposed. It confines the consumption of malt to five millions of quarters annually, which quantity would eventually be doubled, was the public charge on malt only reduced one-third of its present amount per qr. To find a profitable channel for the consumption of five millions of qrs. in addition to the quantity of barley already in use for various purposes would add as many pounds sterling nearly to the annual income of the Empire, and would at the same time confer a great boon on a numerous and industrious body of all denominations amongst the people. The land on which it may be produced would become more valuable to its proprietors, and its production would require the employment of an additional number of agricultural labourers, whilst the reduction of the malt duty, and consequently of the barley price would extend the consumption of beer to many whose means, under the present system, seldom permit them to indulge in the use of this article, to them a perfect luxury. There is not one subject connected with agriculture which demands a greater portion of the attention, not alone of statesmen, but of the public in general, than does the barley trade, on which is levied fully one quarter of the annual revenue of the empire. That the malt and British spirit duties might do more than pay into the treasury annually twelve millions sterling, can be reduced to a demonstration. Four hundred per cent. is charged as duty on British made spirits, and the certain consequence

is, that more than one-half of the spirits consumed in England is either smuggled into the country from foreign nations, or is produced by illicit distillation at home. To reduce this duty even to 5s. per gallon would place at least two millions sterling into the treasury above the sum collected under the present system, and would, in no inconsiderable degree, destroy the profits, and consequently the illegal trade of the smuggler. It would likewise increase the sale of barley, at home, and would vastly improve the moral conduct of the community at large. This is a subject worthy of the best exertions, and daily notice of the public press. It is only most wonderful that the people submit to so much injustice, particularly as it is attended by no public advantage whatever, nor does it confer any benefit on one solitary individual in the empire, except on the smuggler, that great violator of the public law, and enemy to the fair trader, who pays the taxes, and acts otherwise honestly towards his neighbours engaged in the same department of commerce with himself. In place of agitating the corn laws, to create agitation respecting the evil consequences of the manner in which barley is taxed, would be an object which would be attended by incalculable advantages to the people, and which must eventually be successful, when the reduction in duty now charged on manufactured barley is demanded in a firm and respectful manner, from the Imperial Parliament.

Although the oat crop, in proportion to its intrinsic value, suffered from the unfavourable state of the weather during the last season, even more severely than that of wheat, or any other description of agricultural produce did, still since the commencement of this year, all the British markets have been so abundantly supplied with this article, that even the increased consumption for grinding, rendered necessary by the state of the wheat crop, has not caused any material improvement in prices. The consumption during the month of March, has been large, but not more so than circumstances justified, and the trade consequently has been more than usually steady, the arrivals having been regularly disposed of without creating during one week, a greater variation than 1s. per qr., or so, in their value. The supply of oats this season, as has been the case now for some time back, has been principally imported into all the large markets of consumption in Great Britain, from Ireland, where their cultivation is annually making most rapid progress, and in this circumstance have the moderate prices at which they can now be obtained principally arisen. In the year 1838, the importations from Ireland into Great Britain of all descriptions of grain and pulse exceeded three millions and one half of quarters, nearly three millions of which were oats. If we have paid to the Irish producers of this large supply as many pounds sterling, we are certain that our calculation will be considered moderate, for it is within the mark. This large sum of money however, has been paid by one portion of her Majesty's subjects to another, and not one pound of it leaves the empire, for the purposes of food. Now, had we obtained the same quantity of grain from foreign nations, even at one million sterling less cost, we must be permitted to assert that in a national point of view, we are large gainers by the transaction as it actually exists; for, in the one case the sum of three millions and a half paid for Irish grain remains within the empire, and comes speedily again into circulation for articles furnished to the agricultural interest of Ireland, either by our manufacturers, or in payment for other articles of necessary consumption amongst them, such as paying labourers for further land cultivation, &c., but had

only two millions sterling been paid to Poland, or to Germany for the same quantity of grain, it would have been a positive drain on the national wealth to nearly a similar amount, for small indeed would have been the portion of it which the producers of foreign grain consumed here which have expended in purchasing the handicraft of the industrious classes of British society. Manchester and Glasgow might then have suffered in the sale of manufactured goods, and the merchants and manufacturers would have had good reason to complain of the working of a system which gave a preference to foreign over Irish agriculture, and which deprived the latter of the means to purchase home made goods. It is to the protection which the corn laws extend, however, to British and Irish agriculture, that the important interests of trade and manufactures are indebted for, by far the best and greatest market for the consumption at home of their goods; and yet with a blindness which is entirely unintelligible, they demand the repeal of those laws which, in every way, are as protective to their own interests, as they can by any possibility be to that of agriculture. During the current corn season, however, from four to five millions sterling of British money have already been, or will be soon, paid to foreign nations for wheat imported into our various markets for the consumption of the people, and if the doctrines of the manufacturers be correct, they may speedily expect most brilliant orders for their goods, from those nations to whom we have latterly paid so much money for wheat. We shall be much disappointed, however, if they do not find cause to complain of their expectations, in this respect, not having been made good, and to regret that half the money paid this season in exchange for foreign wheat, had not been expended on our home growers of it, for in this case, at all events, the market at home for the consumption of British goods, would have been very considerably improved, and their profits proportionably increased, whilst in as far as the spring has as yet advanced we do not learn that any unusual activity prevails in the exportation of British manufacture. It is we know, increasing annually, but we do not as yet perceive that any increase has occurred beyond that, which probably would have occurred, had no importation of foreign wheat taken place.

We are happy to say that the winter wheats continue to show a most favourable appearance, and even to create hopes already of an early and abundant produce, and the fields generally being in good order for the reception of spring seed, we expect in our May number to make our report of the state then of the coming crops of all descriptions equally satisfactory. The spring is not too forward; the winter wheats are generally well spread at the roots, and will come away from the ground in due time both strong and healthy in their shoots. The field labour in the crops of spring grain is likewise in rapid progress, and another month of the present favourable weather will, in all probability, bring it to a prosperous conclusion.

CURRENCY PER IMPERIAL MEASURE.

	Per Qr.		Per Qr.
WHEAT, Essex & Kent ..red....	64 68	white ..	68 74
Suffolk & Norfolk ,, ..	64 68	do....	70 72
Irish.....	58 60	do....	64 66
Old, red	68 70	do....	76 78
RYE old	40 42	new....	44 46
BARLEY, Grinding 32 36 Malting	36 40	Chevalier	40 42
Irish	32 34	Bere ..	— 30
MALT, Suffolk & Norfolk	66 70	Brown ..	65 68
Kingston & Ware	66 68	Chevalier	68 70

OATS, Yorkshire & Lincolnsh, feed	24 26	Potatoes ..28 30
Youghall & Cork black	22 23	Cork, white22 23 24
Dublin.....	22 23	Westport 24 25
Cloamel.....	24 26	Limerick23 25 26
Londonderry	24 25	Sligo. .. 23 24
Newry	28 29	
Galway	21 22	
Waterford, white.....	21 22	Black.. 23 24
Scotch Feed	27 29	Potatoes 29 30
BEANS, Tick.....	37 38	Small40 42 44
PEAS, Grey.....	38 —	maple.. 38 39
White	42 46	boilers.. 46 48
SEED, Rape	32/ 36/	Irish 25/ per last
English Red Clover, fine.....	64 70	89s per cwt
White	62 66	70 80s
Mustard, White, 12s 14s. brown 21s 22s		per bush
Tares..32 36.....	old 30 34..new 60	—s per qr.
FLOUR, Town-made	65 —	Suffolk ..54 55 per sk of
Stockton & Norfolk—	54..Irish fines56 —	280 lb.

Foreign Grain and Flour in Bond.

WHEAT, Dantzic	60 70
Hamburg	60 68
BARLEY.....	36 32
OATS.....Potatoes	20 —
BEANS	30 —
PEAS	24 27
FLOUR, American.....per bri.	40 42

IMPERIAL AVERAGES.

	Wheat.	Barley	Oats	Rye	Beans	Peas.
Week ending						
Feb. 8th ..	74 1	40 4	25 8	48 5	39 9	41 0
15th ..	71 6	38 6	25 2	44 6	38 8	39 7
22nd ..	71 10	37 10	24 5	41 10	38 7	39 2
March 1st ..	72 10	37 8	24 7	42 3	38 0	39 1
8th ..	73 8	38 9	24 3	41 2	37 10	39 2
15th ..	74 1	39 3	24 4	42 6	37 4	38 10
Aggregate Average of the six weeks which regulates the duty	73 0	38 9	24 9	43 5	38 4	39 6
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the Mail of that day from London	1 0	4 10	10 9	5 0	12 6	11 0
Do. on grain from British possessions out of Europe ..	0 6	0 6	2 6	0 6	0 0	0 0
Foreign Flour, 7d. per 196lbs. British Possessions, do. 3½d. per 196lbs.						

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES from the by the Imp. Quarter, corresponding Gazette from the Gazette, of in the last year, Friday Friday last, March 22, March 23, 1838. 1839.

	s. d.		s. d.
WHEAT	74 1	WHEAT	56 10
BARLEY	39 3	BARLEY.....	29 6
OATS.....	24 4	OATS.....	21 2
RYE	42 6	RYE.....	30 7
BEANS	37 4	BEANS.....	33 1
PEAS.....	38 10	PEAS.....	32 9

SEED MARKET.

MARCH 25.

CLOVER English, red..65 80	95 white	54 73 per cwt
Dutch	— —	— —
German.....	55 90	54 72
French	— —	— —
American	— —	— —
Trefoil.....	— —	16 28
Rapeseed, English	£34 £36 foreign	£28 £30 per last.
Linseed, English sowing.....	— —	— — per qr
Baltic	— —	crushing 46 48
Mediterr. & Odessa.....	— —	48 50
Hempseed, small 34	36 large	38 42
Coriander, new.....	18 20	fine 20 24 per cwt.
Mustard, brown.....	15 17	white 10 13 per bushel
new	— —	8 12
Turnip Seed, new Swedes	22 25	other sts. 28 36
Rye Grass, English	30 42	Scotch 18 40
Tares, Spring	6s 0d to 6s 6d	— —
Canary, new	80 84	— —
Caraway.....	— —	49 51 extra 54

An Account of the quantity of Foreign Grain and Flour imported into the United Kingdom during the month ending the 5th March, 1839; the Quantity on which the Duty has been paid for Home Consumption, and the quantity remaining in Warehouse.

Foreign Grain and Flour.	Quantity imported.	Quantity entered for consumption	Quantity remaining in warehouse.
	qrs. bush.	qrs. bush.	qrs. bush.
Wheat from British Possessions.....			172 4
Ditto Foreign.....	210419 2	211637 4	12870
Barley, do.....	10808 1	20032 4	2661 1
Oats, do.....	15711 1	31365 2	222495 2
Rye, do.....	8164 4	8275	6 1
Peas, do.....	3550 6	4436 5	3524 7
Beans, do.....	2899 7	12848 6	2581 5
Indian Corn, do.....	1108 3	2149 1	2063 4
	cwts.qrs.lbs.	cwts.qrs.lbs.	cwts.qrs.lbs.
Flour from British Possessions.....	1200 0 0	1200 0 0	4594 3 17
Ditto Foreign.....	80528 3 18	78357 0 1	27345 3 15

WOOL MARKETS.

BRITISH.

MARCH 25.

Business has been done; but not to a great extent, as there are only a small number of persons disposed to take other than a trifling reduction in price, on account of the impossibility of replacing at the prices offered generally now. There has been a fair demand for Skin Wool for Flannels, at the advance realized a fortnight ago; and as (in proportion to the increased length of staple, which renders it suitable for combing,) the supply of short wool will become smaller weekly, it is not likely that the price will go down. As has been remarked before, the settling of the price of wool rests entirely on the Northern dealers, who hold the principal quantity; and they are not likely to submit to much sacrifice of property upon their present stocks, unless they can lay out their money better than they did upon what they have, which is not very easy for them to do.

	MARCH 1.		APRIL 1.	
Per lb.	s. d.	s. d.	s. d.	s. d.
Down Tergs.....	1 8 to 1 8½	1 8 to 1 8½	1 8 to 1 8½	1 8 to 1 8½
Half-bred Hogs.....	1 8 to 1 8½	1 8 to 1 8½	1 8 to 1 8½	1 8 to 1 8½
Ewes and Wethers.....	1 4½ to 1 5½	1 4½ to 1 5½	1 4½ to 1 5½	1 4½ to 1 5½
Blanket Wool.....	0 8 to 1 1	0 8 to 1 1	0 8 to 1 1	0 8 to 1 1
Flannel do.....	1 0½ to 1 4½	1 0½ to 1 4½	1 0½ to 1 4½	1 0½ to 1 4½
Skin Combing.....	1 2 to 1 4	1 2 to 1 4	1 2 to 1 4	1 2 to 1 4

EXETER.—This market is not merely firm, but may fairly be pronounced better. The desire to purchase is manifest; and the trade admitted to be good; and York Wool must be quoted at 11d. per lb. In Washed Wools business has been done with some freedom, at a quotation, for Knott Wool, of from 15d. to 16d.; Dorset Horn, 16d. to 17d.; and Marsh Wool, 17d. to 18d. per lb. In Sorts the quotation has partaken of improvement, and for several descriptions, the demand is good, Shorts being, Coarse and Short Coarse, from 8½d. to 8¾d.; Broad Head, 9½d. to 9¾d.; Kent Head, 10½d. to 10¾d.; Red, Green, and Pinions, average from 10½d. to 10¾d.; Fine Head, is from 11½d. to 12d. per lb. Cornish Stripe, is from 14½d. to 15d.; North Devon Stripe, 15d. per lb. FELL WOOLS.—For Skin Wool, particularly of Fine Wools, there is a considerable demand, and an advance, and that too not of an unimportant kind, has been the consequence. Accordingly we must quote Long Wool, of fine quality, at 16d.; and short fine Fells, at 15d. per lb. Ordinary parcels of Skin Wool are from 12d. to 13½d. per lb. Tops, from 19d. to 19¾d. per lb.

LIVERPOOL,

SCOTCH, MARCH 23.—There has again been a good inquiry this week for laid Highland wool at former rates, and in one or two instances for really good lots a shade advance has been obtained. White Highland in de-

mand, but no stock. There continues a good demand for crossed and Cheviot wool, and for some heavy laid lots, lower prices have been accepted.

Per Stone of 24lbs.		s. d.	s. d.
Laid Highland Wool, from....	11 6 to 12 0		
White do. do. (scarce)...	0 0 0 0		
Laid Crossed do.	13 0 14 0		
Washed do. do.	15 0 16 0		
Laid Cheviot, do.	15 0 18 0		
Washed do. do.	20 0 23 0		
White do. do.	33 0 35 0		

FOREIGN.—An improved demand has existed for Wool since this day week, and former rates have been steadily maintained. Peruvians were in good request; combing Russia qualities were extremely scarce, and they would readily obtain advanced prices; 300 bags of Portuguese were likewise parted with; 200 bags of unwashed Syria Wool will be brought to the hammer on the 28th instant. Arrivals during this week, 3,929 bags; previously this year, 16,513 bags; total 20,442 bags.

SCOTCH.

Per Stone of 24 lbs.		MARCH 1.		APRIL 1.	
		s. d.	s. d.	s. d.	s. d.
Laid Highland Wool, from.	12 0 to 12 3			11 6 to 12 0	
White Do. Do.....	14 6 15 0			0 0 0 0	
Laid Crossed Do.....	13 0 14 0			13 0 14 0	
Washed Do. Do.....	15 0 16 0			15 0 16 0	
Laid Cheviots.....	17 0 18 0			15 0 18 0	
Washed Do.....	22 6 24 0			20 0 23 0	
White Do.....	33 0 35 0			33 0 35 0	

FOREIGN.

MARCH 25.

Several somewhat extensive sales of superior German and Spanish wools have been effected since our last, at full prices; but in other kinds of Wool little is doing. Since our last, the imports have consisted of 1,750 packages.

Electoral Saxony wool, from 4s. 6d. to 5s. 2d.; first Austrian, Bohemian, and other German wools, 3s. 4d. to 4s. 4d.; second do., 2s. 4d. to 3s. 2d.; inferior do. in locks and pieces, 2s. to 2s. 6d.; German lamb's do., 2s. 0d. to 3s. 0d.; Hungarian sheep's do., 2s. 2d. to 3s. 0d.; Leonesa sheep's do., 2s. 4d. to 3s. 0d.; Segovia do., 1s. 10d. to 3s. 0d.; Soria do., 2s. 0d. to 3s. 2d.; Caceres do., 2s. 2d. to 3s. 0d.; Spanish lamb's do., 1s. 8d. to 2s. 8d.; German and Spanish cross do., 2s. 0d. to 3s. 2d.; Portugal sheep's do., 2s. 0d. to 3s. 2d.; do. lamb's ditto, 1s. 6d. to 2s. 0d.; Australian, fine crossed do., 2s. 0d. to 3s. 6d.; do. native sheep's do., 1s. 6d. to 2s. 7d.; Van Diemen's Land, native sheep's do., 1s. to 2s. 4d.; and Cape of Good Hope do., 1s. 4d. to 3s. per lb.

LEEDS, March 22.—The business now doing in this market is considerable; for all sorts, but especially the lower, prices are firm.

POTATO MARKET.

SOUTHWARK WATER-SIDE, MARCH 25.

The arrivals of Potatoes during the past week has been liberal from the inland coasts as well as from the channel islands—annexed is a statement of the respective sorts from Yorkshire, 1,464 tons; Jersey and Guernsey, 491; Devons, 406; Scotland, 70; Kent, Essex, and Suffolk, 157; making together a total of 2,588 tons. In consequence of the recent advance in the price of best samples—and the above liberal supply—sales have been rather heavy during the past week.

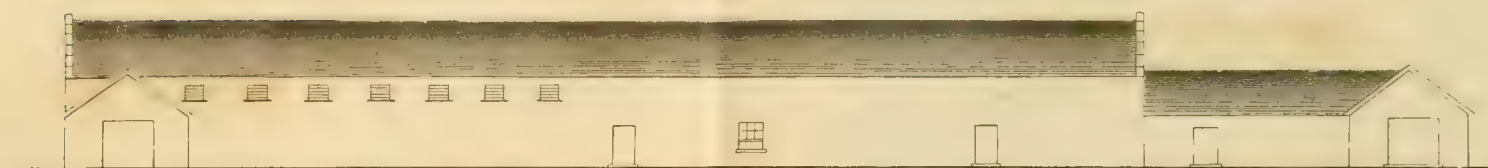
PRESENT PRICES.

Per ton.	Per Ton.
York Kidneys.....—s.	Jersey and Guernsey
York Reds.....90s. to 100s.	Blues.....60s. to —s.
Scotch Reds.....50s. to —s.	Jersey Whites...50s. to —s.
Devon do.....30s. to —s.	Kent, Essex, and Suffolk Whites..55s. to 70s.

PLAN DESIGNED FOR A CLAYLAND ARABLE FARM OF 100 ACRES.

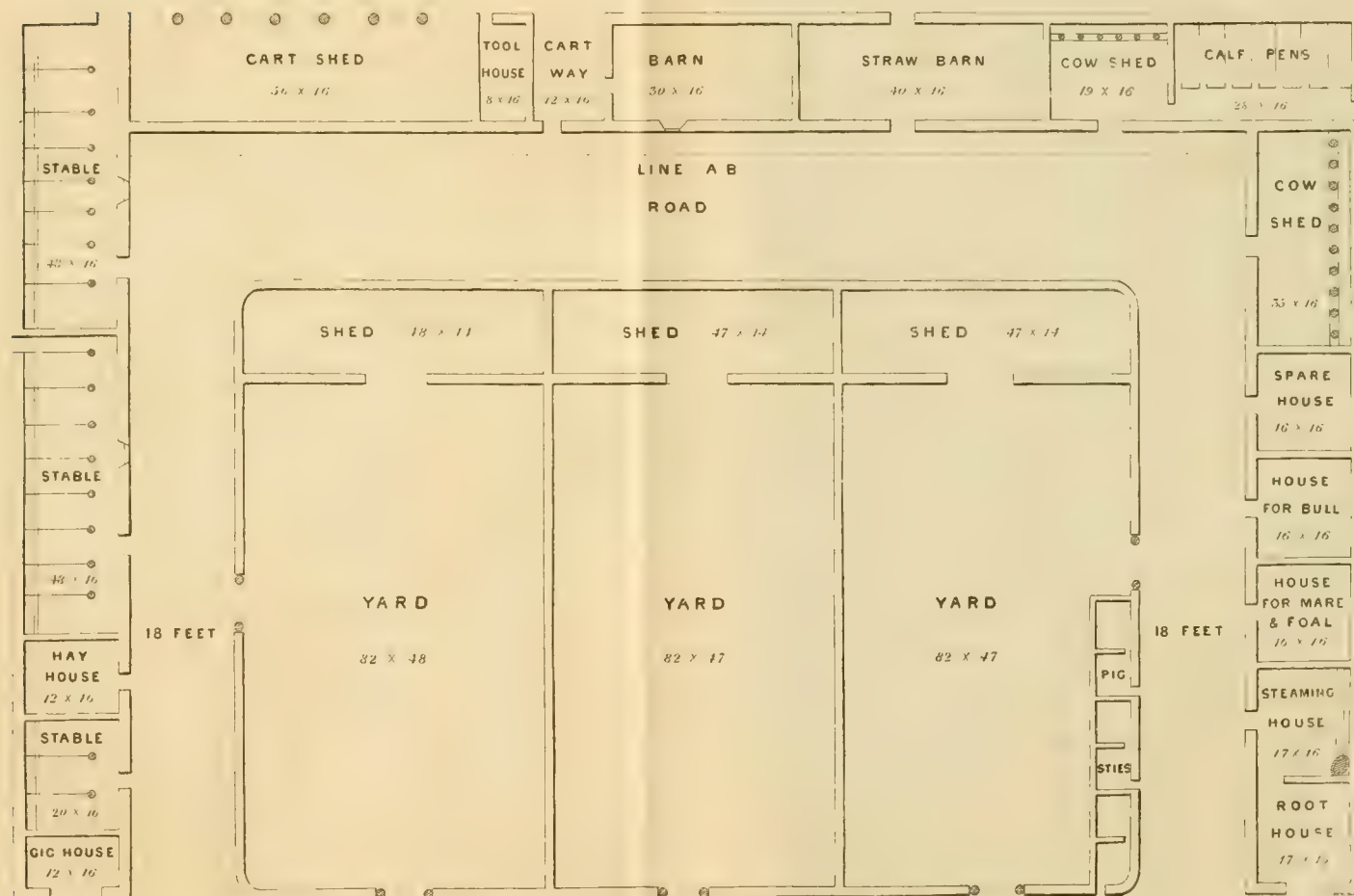
not producing green crops kept chiefly or wholly in tillage

Estimate about £ 800



ELEVATION ON THE LINE A B

LENGTH 220 FEET



J.D. Ashman, F.R.S.

10 20 30 40 50 60 70 80 90 100 Scale 50 Feet to an Inch

An
in
el
th
tl
Fore

Whe
Pe
Ditt
Barl
Oats
Rye
Peas
Beas
Indi

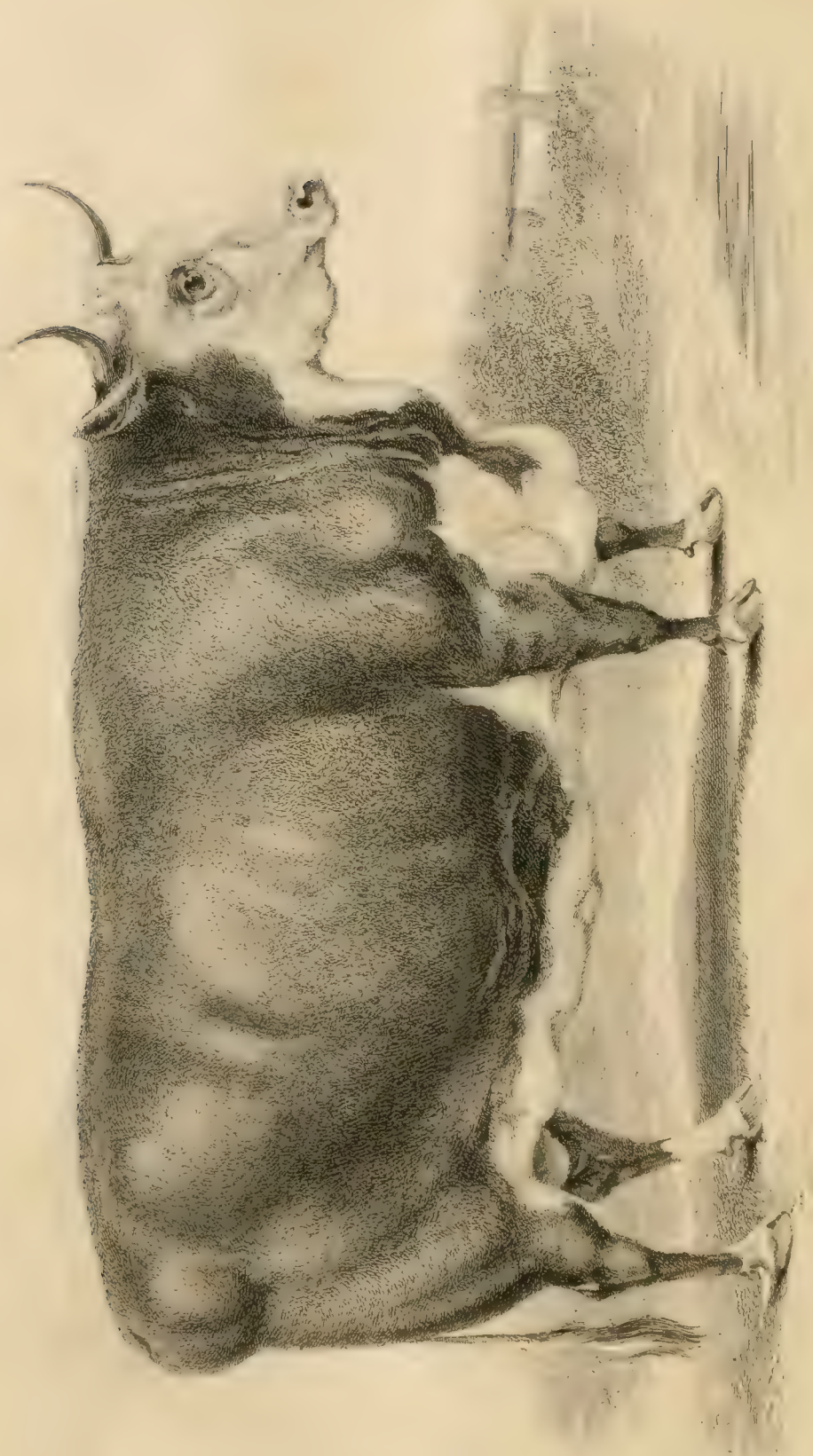
Flou
Pe
Ditt

B
ther
take
of t
gen
Wo
ago
stap
ply
like
mar
tirel
qua
sacr
they
wha

Dow
Hall
Ewe
Blar
Flan
Skin

E
fairl
man
Yol
Wo
quo
Der
18d
impi
is ge
8 $\frac{1}{4}$ d.
10 $\frac{1}{4}$ d.
10 $\frac{1}{2}$ d.
Cor
Strij
part
man
port
we
and
of
fron

S
inqu
and
adv



THE FARMER'S MAGAZINE.

MAY, 1839.

No. 5.—VOL. II.]

[NEW SERIES.

THE PLATE.

The subject of our first plate is a Hereford Ox, four years and eight months old, bred and fed by H. Chamberlain, Esq., of Desford, Leicestershire. This ox was by "Conqueror," (bred by Mr. Heming, of Kingsland, Herefordshire), dam "Old Snowdrop;" was exhibited at the Smithfield Show in December, 1838, and obtained the first prize of 20 sovereigns in class 1. The silver medal was awarded to Mr. Chamberlain, as breeder. This animal had been shown at Leicester, on the 1st December, 1837, as a store ox, and obtained a prize of 5 sovereigns in class 5, as the best ox bred and fed in the county, with restrictions as to feeding from the age of six months. He was again exhibited at Leicester, in class 1, on the 7th December, 1838, and obtained the silver tankard, value 13 sovereigns, as the best ox under five years old, of any breed or weight, open to all counties, without restriction as to feeding; a prize of 5 sovereigns was also awarded to him as the best beast, bred and fed in the county, shown in any of the classes. No observations which we can make would prove the celebrity of Mr. Chamberlain as a breeder so conclusively as the facts of his having obtained prizes for oxen and sheep at the late Smithfield Show, and, as will be seen by the report of the meeting of the Leicestershire Agricultural Society, inserted in this Magazine, no less than six prizes for beasts, five for sheep, and one for pigs, at the last meeting of that society.

LECTURE ON THE MARQUIS OF TWEEDDALE'S BRICK AND DRAIN TILE MACHINE.

DELIVERED AT THE ROYAL INSTITUTION, APRIL 19,
BY MR. COTTAM.

Every one, unless he come from the countries where the brick from the clay-pit is superseded by either stone from the quarry or by wood from the forest, is or ought to be, interested in them, and all of us are concerned either directly or indirectly in whatever increases the durability, or facilitates the production of building materials. The districts and countries where brick is superseded by stone or wood, are determined geologically. In the northern countries wood-work is all in all. There are scarcely a score brick-kilns in Norway. The forest makes good the deficiency. In Scotland where some one said that such was the scarcity of trees that *although you might farm a walking-stick, you must import a fishing-rod*, the

OLD SERIES.]

inhabitants rely, not upon the plantation, but upon the kiln and the quarry. It is the same in our own country, in Northamptonshire and the oolitic districts there are twenty houses of stone for one of brick, and where nature is still more niggardly, you have stone walls instead of thorn hedges. Give then the materials of a dwelling house, a geologist is enabled to determine the nature of the strata in the neighbourhood. Thus points which appertain to brick-making, although of importance to every one, are especially so in the eyes of those that like ourselves (by ourselves I mean the inhabitants of London) inhabit the clay districts.

Bricks are of great antiquity, as it appears by the sacred writings, the tower and walls of Babylon having been built with them. The Greeks used three kinds of bricks, the first was called Didôron, i. e. of two palms, the second Tetradôron, of four palms, the third Pentadôron, of five palms. They had also other bricks of half the size of the Didôron, Tetradôron, and Pentadôron respectively. They rendered their works more

Z

[No 5 —VOL. X.

solid and more agreeable to the sight by varying the figures and sizes of the bricks.

The Roman bricks according to Pliny were a foot and a half long, and a foot broad, which measures agree with those of several Roman bricks now in England, these being about seventeen inches long, and eleven inches broad of our measure.

Sir Henry Wotton in his Elements of Architecture, speaks of the bricks he saw at Venice with which they were building large columns; they were made in circular moulds and cut into four segments before they were burnt, and in laying them they were so closely jointed that the columns appeared to form one entire piece. Bricks are now made of that shape for Hiort's Patent flues.

Various shaped bricks are made to suit particular purposes, but the quantity required of any shape but the common one is very small indeed when compared to the immense quantity required of the ordinary size and shape. It is the common bricks that our present machine is intended to manufacture.

It is well known that the manufacture of bricks can only be carried on in the summer season, and during fine weather; it is, therefore, necessary using the common adage "*to make hay while the sun shines*," but this cannot always be done, for the want of skilful workmen. The greater part of the work it is true can be done by common labourers, but the principal part, viz., that of moulding the clay into the form of a brick, requires both a skilful and expert workman. A good moulder will mould about four thousand, but there are those to be found who will mould as many as from five to six thousand a day, nay, even as many as seven thousand have been moulded on extraordinary occasions by great adepts. It will be necessary to state that a brick-maker's day is not that of an ordinary workman. The ordinary working day is computed at from six o'clock in the morning, to six o'clock in the evening, allowing two hours for refreshment, which leaves ten hours for labour; but the brickmaker's day is from sunrise to sunset, and a bit of twilight besides, and cannot be called less than sixteen hours clear labour a day, and taking five thousand per day of sixteen hours would give about three hundred and twelve per hour, or about five and a half per minute. These good moulders are by no means plentiful, it is therefore not difficult to conceive that such men will set a full value upon their own services, and so doing, not only stipulate for high wages, but also work or lie idle according to their own fancies. When however, they do work, they do so in right good earnest, and are *bonâ fide* labourers.

This liberty either to work or play as they please, is a serious evil to a work that can be carried on only during fine weather and in the summer season. No wonder then, that every attempt should be made to contrive machinery to accomplish so desirable an object.

Numerous machines have been contrived within these last thirty years, and not fewer than thirty to forty patents have been taken out, scarcely one of which has ever been heard of, after having been published in the list of patents, the greater part of these inventions have failed in consequence of the inventors having attempted to make the bricks in moulds or forms in a similar manner to those made by hand. When the sanding of the mould, the putting in and taking out of the pallets that were required, occupied so much time, that it became a question if any advantage were gained.

The inventor of the machine I am about to explain, took a new view of the operations, he made no attempt to imitate the present mode of moulding, he commenced by making an endless sheet of well pressed clay, of the proper breadth and thickness and shape, he then cuts it into the lengths he desires. Here there is one continued and uninterrupted operation.

The brick machine will mould at the rate of 24 bricks per minute, or 1,440 per hour, and taking 10 hours work would give 14,400 per day; but if a brickmaker's day of 16 hours, it would produce 23,040 per day: taking an average of 15,000 a day, four of these machines would make as many bricks in one season as there are inhabitants in England and Wales. A good London moulder with three or four persons, generally his own children, will make about four thousand bricks. The machine with the same number of hands will make fifteen thousand in ten hours, and in the brick-makers' working day of sixteen hours, 23,280 or twenty-four thousand per day.

The bricks made by the machine will not require one-third of the time to dry them, that the hand made bricks now take in consequence of the compression the clay undergoes. Two bricks, one made by the machine, the other by the hand, were put into water six hours, in that time the machine brick absorbed four ounces of water, and the hand made one twenty-eight ounces. The machine brick when burnt weighs 8lbs., and the hand-made brick about 5lb.

Having dilated upon the subject of the chief material in the construction of houses, I must now consider another and equally important branch of the earthen manufacture. The adaptation of machinery to the purposes of building, and the success of the present plan led to an enlargement of its powers, and a beneficial direction of mechanical contrivance to the necessities of subterraneous draining. Agriculture, hitherto subjected to the hidden causes which operate so powerfully against human labour, was destined to receive a valuable adjunct from this portion of science, and whilst we have just beheld the mansions of humanity, secured from the torrents of Heaven and the searching winters' wind, we have now to contemplate the hidden obstacles removed from the soil, and the labourer, in every sense of the word, rendered worthy of his hire on a grateful and genial land.

Of late years this branch has assumed a new aspect, and comes forward to our attention. Tile-work is no longer exclusively applied to the roofing of houses, and as a defence against the weather. It has been extended from the house to the farm, from the personal to the landed property. It takes off the waters under the earth, as well as the waters that are above the earth; we are now enabled to drain with tiles. The rain on the house is not more surely removed off by the gutter, than the swamp is reclaimed by the draining-tile. I must request your particular attention to the new application of tile-work, and above all to the still newer improvements in it.

This machine* will make 10,000 drain-tiles a day, one man and two boys to attend it, and twenty thousand of flat tiles for the drain-tile to lie upon, but if the tiles are broad for roofing, it will make 12,000 a day. These draining tiles are fifteen inches long, so that three machines would make in one sea-

* See plate and description of drain tile machine in *The Farmer's Magazine*, published on the 1st of March last.

son (of thirty weeks,) as many tiles as would lay a drain from London to York.

Now a man and two assistants will only make 1,000 drain-tiles in a day, and these only one foot long, which is 1,000 feet per day. While the machine with the same number of persons will make 12,500 feet per day; so that if the drain be laid at the distance of 25 feet, it will make in one day sufficient tiles for six acres.

The advantages are—

1st. The tile is much stronger from being compressed, and less impervious to water—it is not only compressed but it is smoother over, which gives it a surface as though it were glazed. They are capable of being made from a much stiffer clay than usual, and in nine cases out of ten the clay may be used directly on being dug, if passed through the crushers,* being much drier.

Clay, unfit for bricks and tiles by the common method, is available by the machinery. The expense of draining will be paid in three years, but not unfrequently in one.

I am happy to inform you that this apparently humble but greatly important subject has been brought to the present state of perfection, by the assiduity and talent of a distinguished member of the aristocracy. Amidst the conflicting claims which honor and glory present to the nobility of England, it is truly gratifying to find in its ranks men willing to devote their leisure and energies to the promotion of human comfort, and the furtherance of human enterprise. The fame of the warrior and the legislator may be an ample inducement to the aspiring noble to enter the lists of fame, but when we find an individual in whom these two functions are united, bending his matured intellect to a subject with so few attractions for the world, we are justified in congratulating ourselves that the example of a Stanhope has not been lost upon his emulous countrymen.

ON HERBACEOUS GREEN CROPS.

(ORIGINAL.)

These crops comprehend beans, peas, winter and spring tares and clovers, of class and order "*Diadelphia Decandria*" of Linnæus, and of the leguminous and papilionaceous families of our natural system. Beans delight in stiff clays, and peas in deep warm loams, and both plants are cultivated chiefly for the grain, the straw or haulm not being generally of great bulk or value. These crops partake of a medium character between the cereal and the green crops—more ameliorating than the former, and from their structure and habits, not admitting the cultivation, cleaning, and pulverization of the latter. Several varieties of the bean are used, differing in size but little in quality, and admitting of the same mode of cultivation, with the exception of the winter bean, which is sown in autumn instead of the spring. Beans are sown in the spring, so soon as the season and the state of the land permit, and on dry clayey loams, friable by nature or made so by heavy and repeated manurings, the seeds are dropped in the bottom of the furrow from a barrow appended to the third plough, which by reckoning nine

inches to each furrow, makes the intervals 27 inches distant. This mode, supposes very clean land, dry, and of good quality; in other places, drills are raised and manured as for turnips, and the beans are sown on the manure and covered by a light harrowing or by reversing the drills. In some instances the manure is carted on the land in autumn so soon as the crops are removed, spread on the stubble and ploughed in, and the land undergoes a partial working and fallowing in the spring preparatory to drilling the beans by the plough or by the machine. This mode also supposes good clean soils, a drill made by a single furrow of the common plough, the beans sown broadcast and harrowed in, answers very well, and in all cases of wide intervals, both horse and hand-hoeing may be used so long as necessary and the growth of the plants permit. Where a short variety of beans are used and where from soil and climate a great luxuriance of foliage is not expected, machines with coulter make a rut and deposit the seed in drills of 12 and 14 inches distant, which admits of a partial hand hoeing. This mode also supposes land of good quality, clean, and friable, to allow the coulter of the machine to work; in case of wet and stubborn waxy clays, where the constitution of the soil prevents any preparatory process in the spring, and any operations by a drill machine, broadcast sowing still prevails on one furrow, and beans are found on such soils to be more profitable than oats, and are sown in their place previous to the land being summer fallowed. In any method of sowing, they require little covering;—in southern climates they are among the earliest crops that are cut, and in northern latitudes they are the latest, both soil and climate encouraging a late vegetation and ripening. Beans are cut by sickles, tied with ropes made of straw, stacked and thrashed by flail or machine. The produce of beans is very precarious, in many seasons and situations almost nominal, the value of the haulm depending also on the earliness of the crop and delicacy of growth, a rank produce of straw being only fit for litter and therefore of no great value. In many counties they are little used.

Peas constitute one of our smothering crops, and delight most in deep and warm loams on a dry bottom, and are sown by machine in drills of about 12 inches distant, or by broadcasting. When drilled, hand-hoeing may go on until the foliage meets across the intervals, and excludes all further proceedings. They have also been drilled at horse-hoeing distances, but little or no benefit was observed to result from the process. About three bushels of beans and peas are allowed to an acre—by drill, something less. Several varieties are cultivated, but the white pea and the Prussian blue are most common for the early and warmest soils, admitting of a late crop of turnips after they are removed, and the yellow marl and Hastings varieties are generally used on the later and most common pea soils. The produce per acre is very various, the haulm is serviceable as provender for horses when well harvested in an early and favourable season, in other cases it is fit for litter only. The crop is cut by sickles, rolled into bunches, loose or tied with ropes twisted of the haulm, stacked in that state, and thrashed by flail or machine. Both these crops are adapted for a dry and an early climate, and are subject in certain seasons to attacks from insects which stunts the growth of the plant and limits the produce. These attacks are the result of a peculiarity in the seasons, and on that account may never admit of any preventive being used, or of any remedy being applied. At present no knowledge exists on either point.

* These crushers are iron cylinders, independent of the machine through which the clay is passed before it enters the pug-mill, when necessary to crush any hard substances.

Winter tares are generally sown on a stubble in September and October, at the rate of three bushels to an acre; often mixed with rye or winter barley, and are used in the spring for green food for horses and other stock, and for eating on the ground by sheep with a portion to stand for seed. This crop enters largely into the double crop system practised in the southern counties; and in such latitudes where mild winters are expected, it constitutes a most invaluable plant, for with the exception of rye it comes the earliest into use, and affords a heavy and much relished produce. Good warm loams and clean, and in good heart, are indispensable. The smothering nature of the crop will tend to keep land clean, and the benefit derived from eating on the ground by sheep, will serve very much to keep it in heart, while the great value of the herbage as green food will yield such a quantity of manure in the home yards, as will ever rank this plant as a most valuable appendage in all situations where it can be cultivated. Our northern climates nearly or wholly exclude it. A top dressing of soot in the spring, as soon as the weather allows of it, very much contributes not only to forward the crop for early use, but also greatly to increase the bulk of the produce, while the smothering nature of tares and peas will leave the land in a clean and mellow state, provided the crop be sufficiently thick to leave no vacant space where weeds may grow, and wholly to exclude the air from beneath. A thin crop of such plants arising either from thin sowing or from poverty in the soil, or from foul condition, is one of the most pernicious that can be imagined, and only makes bad worse.

Spring tares are sown so soon as the season permits in the spring, and continued generally for three sowings; with intervals of three or four weeks intervening. Spring and winter tares are the same plant, obtained from a continuance of late and early sowing, and from using the seed produced by these sowings, they are generally sown on one furrow, well harrowed and rolled to suit the mowing by the scythe. The sowing of spring tares may be so managed as to yield a supply of green food for four months at least; a quantity made into hay afforded me at different times the most agreeable and supporting food for horses during a long and heavy wheat sowing season I ever experienced; but making the crop into hay is the work of chance only, and not to be ranked among the regular processes of farming; for soiling in the yards and for making manure the value is incalculable.

The clovers most generally used are red and white, sown in the spring with wheat, barley, and oats, after fallowing and manuring, harrowed with light harrows and rolled afterwards. The quantity sown per acre varies much in different soils and situations, but from 6 to 16 lbs. per acre, may be taken as an average, often mixed with rye grass and other perennials, and not unfrequently sown nearly or wholly unmixed, and constituting clover-hay, which brings the highest price in our markets. Besides the well-known use in the form of hay, red clover is valuable for cutting as green food in the early summer months, and white clover is more especially useful for perennial purposes. Rye is sown on a stubble with one furrow in autumn, and fed off in the spring with ewes and lambs; and for that purpose it suits well on dry and sandy soils in our southern counties, as it comes the earliest into use, and admits the land being resown with a cereal crop, or more properly of being fallowed for turnips. Rape may be sown as late as the month of August for winter and spring feed, and is very useful for the purpose of cropping any land where there is a defi-

ciency of manure for turnips; it may also be sown early in the spring for summer feed, and being eaten on the ground by sheep, would form an excellent preparative for winter tares. I am here speaking of inferior soils, and in inland situations where the want of manure renders all such auxiliaries to be anxiously sought for and applied.

With the exception of beans and peas which are cultivated for the value of the seed as prepared food for animals, the above crops constitute what may be called our secondary green crops, and in many instances are of the last importance in situations where no other substitute has yet been found. In some observations I lately made on the cultivation of cabbages and beet, turnips, and potatoes, I pointed out the regular supply these plants would afford to the stock kept on every well arranged farm for six months, from the beginning of November till the beginning of May, and I shall now add a few remarks on the individual and relative uses and value of the secondary green crops, combined with others in a system of grain and stock farming. Our northern latitudes would exclude many of them; beans and peas are but rarely sown except on the best soils and in the earliest climates, and tares, rye, and rape are almost wholly unknown. Sheep farming is only yet gradually progressing northwards, and for cattle, turnips have ever constituted the chief attention of the farmer as winter food for his stock. The soil and climate are much adapted for the certain production of this plant and for potatoes, but spring tares might be advantageously introduced in quantities to suit the stock kept on the farm. In our richer and improved counties where a regular rotation prevails, and where the soil and climate are adapted for the growth of turnips, &c., for a supply of winter and spring food, these secondary crops will be little known; but when we leave such situations, and the severe climates of the north, we arrive among the inferior soils of our inland situations, sands, downs, and uplands, where the production of turnips is a mere matter of chance from the dryness of the climate, and from want of loam in the composition of the soil, and where from the same and similar causes the other green crops are equally incapable of being raised in quantity, and with certainty of a regular supply; such situations abound all over the kingdom, especially in the southern counties, and the farmer seeing the necessity of providing for the sheep stock, the best adapted we yet know of for such case, has adopted the crops most likely to assist him during winter and spring. Great and most valuable advances yet remain to be made in producing our winter crops, but we must take things as they are, and do the best for an improvement. Rye comes first in the spring as food for sheep, and to relieve the scanty crop of turnips, &c., the farmer may have obtained, and which during winter he has divided between his sheep and cattle. The produce of rye is small and soon consumed, and winter tares are seldom ready for use before May, or the middle of May for cutting; if used very early "of necessity" the loss is great, even though allowed to grow for a second eating. But in such cases the early use of even half a full crop is of immense value at that season of the year. For such situations there exists "a want" of a plant to supply food in March and April, to come into early use from spring growth and sown in autumn, or to stand through the winter ready for consumption in these months from the growth of the previous season. Rape and the "cruciformæ" family, if a crop could be got, when allowed to stand, soon shoot up for seed, and an early spring vegetation will ever be dependent on the severity or mild-

ness of the season. Winter tares may be much forwarded by a manuring in autumn or a dressing in the spring, but in many cases the means are not available. To the business of finding such a plant the attention of our botanical and natural history gentlemen must be directed; the plants we possess have come to our knowledge by chance or by the observation and exertions of single individuals, and never yet, in any one instance, has the business been gone into as a science on which so much depends. On this subject I refer to the observations I made in last magazine on an Agricultural Institution.

Rye and winter tares are the only relief until the grass arrives; when eaten on the ground, or when the latter crop is mown for soiling, the land is ploughed for a green crop or a wheat fallow. It has been objected that such cropping is merely catch-farming, and that the land never can be in so mellow a state for turnips as when ploughed during winter and wrought at an earlier season. This observation is very true, but spring food must be had even at a partial loss, and on stiffer soils tares eaten on the ground by sheep form a good preparative for wheat. The winter crop will be consumed soon enough to admit of the land being partially fallowed, and the spring sown tares will continue through the month of September when the wheat may be sown on one furrow. To balance the imperfect state of the land after such cropping, we have the value of the crops themselves and the benefit conferred on the land by the sheep, which in such situations is almost the only means within the reach of the farmer. When tares are eaten on the land much waste would be prevented by cutting the crop and putting it into racks, in many cases the sheep spoil as much as they eat; the other great use of both winter and spring tares is for soiling the farm horses during the whole summer. The cattle are usually turned out to grass in May, and then the horses may be put into the yards when the winter tares will be ready, and if liberally supplied with straw, a great and constant supply of manure will be thus obtained during the whole year; the swine must also be amply supplied with them and with straw for litter. It seems to be now ascertained that "*trefolium incarnatum* and *lolium italicum*" will not supply an earlier herbage or so valuable and productive as our varieties of tares under all the different circumstances of soil and climate. The quality of any article is at all times a most desirable object, but if the quantity be too much reduced the article will not hold its place in a systematic course of production and of reproduction.

An opinion has been long entertained and very confidently promulgated by some of our scientific writers on agriculture, that the drill cultivation of our secondary green crops would dispense with summer fallowing on all the clay soils in our island. In making this assertion these writers have only exposed their total ignorance of the soils in question, for by no process of cultivation known to us, can we, at the early period when beans and peas require to be sown, or after the time of reaping, work, clean and pulverize the land, nor can we at either period apply the manure with advantage. The physical objections are insurmountable, and any attempt that have been made have wholly or partially failed. It does certainly remain to be seen how far our modern system of close draining will obviate these objections; and in making reports of the effects of such draining it would be very important to have it stated if the complete subtraction of water effects any alteration on the constitutional texture of the soil so as to make it more friable and more reducible to a state for green crops, or if it be confined to making it drier and more ac-

cessible at all seasons and easier of tillage under the old system of fallowing. At present beans and peas drilled or broadcast and tares for eating on the ground can be only thrown in as a crop to deter for two years more the return of the fallowing process for wheat or green crops when they are cultivated in the ways above described. But in no case have they been able to dispense wholly with fallowing. In many cases they are sown on grass in the place of oats where the fixed rotation affords no room elsewhere, and on every farm tares for soiling appear to me to be an indispensable requisite. The winter crop and the first cut of the summer crop would be removed early enough to plough the land for rape, which might afford a bite for sheep during winter before ploughing for next fallowing.

It has often occurred to me that our inferior upland soils, downs, and sands, might be much improved and more profitably cultivated by the exclusion or nearly so, of the cereal crops, by being constantly sown with rape and tares and clover, and eaten on by sheep. These crops admit of a regular succession, and a crop of turnips may be thrown in, and also of barley at intervals when the land has been sufficiently ameliorated, for at present the crops are very inferior and often a total failure. Rye for a standing seed crop is, in most cases, more productive than barley in grain, and much more in straw. Red clover might also be used as a change in cropping, and in all cases a thick sowing must be effected to smother the weeds; of clover not under 40lbs. to an acre, for if weeds find one unoccupied spot they will soon get the mastery, and the land will become excessively foul. I am of opinion that on extensive inland and upland farms containing a varied quantity of inferior soils, and in cases where a farmer enters to a great extent of poor impoverished lands in cultivation or in shape of leys and turfs, that a gradual and very useful improvement may be effected by means of these crops in a succession for eating on the ground, used and continued until the farmer find ways and means of fallowing the lands in rotation. In such situations the means of manuring are limited, and until the means be procured on the farms, stock will be kept and fed, and the land gradually improved by the above recommendation. Thick sowing is indispensable, four to six bushels an acre, for smothering crops do no good to the land, in fact they render it fouler unless they cling together and quickly produce a dense thick mass. Instances have occurred where, on good clean lands, wheat and grass seeds have been sown after beans, peas, and tares, the land being scuffled and cleaned in autumn; but the practice never can become general, and only defers the fallowing process. To constitute farming, we must have improvements and profits going together, and at no great intervening distance; and in progressing towards the perfection of it "that nothing grows except what is sown," we must avail ourselves of every auxiliary both for amelioration and for profit; to join the two forms the essence of the art, and it has often struck me that on the soils and situations I have mentioned, a process combining both might be adopted by the use of the crops above described. J. D.

April 15.

FARMING IMPROVED.

By LOUISA H. SHERIDAN.

G. says "the prize sheep, having wool smooth as flax, Made him long for a rubber of whist on their backs;" What a hint for the new agricultural school, As a quick, easy method of carding the wool! Yet the chance of fair dealing is greatly decreased, Who cuts in at such tables,—can't help being fleec'd.

EXHIBITION OF THE PRODUCTIONS OF INDUSTRY.—WOOLLENS.

(TRANSLATED FROM THE FRENCH FOR THE FARMER'S MAGAZINE.)

A complete revolution has been effected within a few years in this branch of our manufactures. At present we fabricate woollen tissues of so soft and fine a nature that the same article made of cotton must give way, one would think, to the above improved article. The variations in the weather in all climates render woollen clothing necessary every where. The skill of our workmen has enabled them to manufacture woollen goods, which are not only valuable for their warmth and durability, but also for their goodness in quality, variety of patterns, and fastness of colour.

The French woollen trade is thus one of the most important branches of our national industry, both as regards agriculture and manufactures, and certainly the most brilliant success seems destined to attend it.

Now that the galleries of the exhibition are about to be thrown open, it may be useful to take a short glance at our woollen trade, and the progress it has made since the first exhibition of our industrial productions, which took place in 1823.

The progress in *short or carding* wools, of which the Merino is the chief, has been immense since the time when Louis XVI. obtained from the King of Spain 200 ewes and rams, of the pure blood of Leon and Segovia with which he formed the flock of Rambouillet.

As to the *long or combing* wool—that species of which, when combed, the different hairs lie in long straight lines parallel with each other, and possess such a beautiful and silky texture, free from harshness, and, for this latter reason, so difficult to produce—French agriculture may be said to be in its infancy, a few and not very numerous flocks comprising all its riches in this staple. This class of wools forms one of the principal productions of the English flock-masters, and from which are manufactured those beautiful goods, which have not only such an extensive home market in that country, but are also exported in extraordinary large quantities to foreign countries. At the exhibition of 1817, there were shewn some beautiful specimens of soft, silky French wool, which were presented by Madame le Comtesse du Cayla, MM. le Vicomte de de Turenne, Hennet, Le Vicomte de Sasthène de la Rochefaucauld, Bernard de Bussy, and Sellière de Mello. At the exhibition of 1834, although, by that time, sheep producing this wool had been greatly increased in numbers by the rich proprietors, not two specimens of this wool were to be seen, the flock of Alfort affording the only specimen exhibited. "Let us hope," said the reporter on the exhibition of 1834, "that, at the expiration of fifteen years—at the exhibition of 1839, with all the experience obtained in the course of these years, the results obtained from experiments made in those parts of the country which enjoy good pasturage, upon rich soils, with a sufficiently humid climate—may be such as we have a right to expect from our rich proprietors; in short, such as the continually growing demand for combing wool by our manufactures calls for."

Fifty years of industry and perseverance have, it appears, been necessary to acclimatize the Merino sheep, and to increase their numbers to any considerable extent, their numbers being, unfortunately, as yet far too limited, when we consider the great advantages which agriculture must necessarily derive from the breeding of this very useful species of domestic animals.

At the exhibition of 1834 two circumstances were noticed, proving the fact that improvement was unquestionably taking place. The first was the increase of large flocks of Merinos, producing the finest quality of wool; the second was the great increase of a mixed breed of sheep, producing wool of a medium fine quality, which results from a cross of the best Merino rams with sheep indigenous to the country. Already at the above epoch, the sheep in the middle and northern parts of France, the native flocks of sheep had become so far improved as almost to be termed an altogether improved breed, the 'original species, with all their defects of frame and coarseness of wool, having given place to a race of more symmetry, and covered with a richer and more beautiful fleece; which are very important results, seeing that the most celebrated manufacturers of Louviers and Sedan have acknowledged that our good intermediate fine wools possess qualities which render them preferable to the very best wools of a similar kind grown in Spain. This is a very great improvement, as was remarked by M. Chas. Dupin; and in a few years we may hope to place by the side of the wools produced in the Iberian peninsula equally good superfine Merino wools grown upon sheep bred in France.

In 1834 none of these moderately fine wools were exhibited at Paris, nor any wools of a soft and bright character. It was in 1823 that specimens of French indigenous wool, as we may call it, figured at the exhibition, the number of specimens shown being eight; in 1827 there were fifteen, and in 1834 there were eighteen only. We think it our duty to give a statement of the specimens exhibited at this exhibition of 1834, with the names of the parties to whom they belonged, which we extract from official documents.

The best specimens were exhibited by MM. Perrault de Jotemps et Girod de l'Ain, Directors of the Association of Naz. The flocks of Naz have already a standing of thirty-five years. Always breeding in and in, it now possesses that continuous purity of blood which is deemed so valuable by the best informed breeders, actually presenting a distinct species of improved sheep, combining as important perfections as are to be found not only within the limits of France but throughout the whole extent of the two hemispheres. The best of our national products in this class are either from Naz itself or have been bred from stock obtained from that place. It has furnished sheep for the foundation of flocks upon the large breeding farms in Wurtemberg, Austria, Sweden, the Crimea, and even in the British Colonies of New South Wales. There were 2,500 head of sheep in the flock at Naz in the year 1834. Its wool equals in fineness that of the best flocks in Saxony, and is superior to them in strength. Sheep farms stocked by animals obtained from the Naz flock are being rapidly established in several of our departments; so many that they altogether furnish more than a thousand rams which suffice for a hundred thousand ewes*. These statements shew

* M. le Vicomte Perrault de Jolemps, and his associates, MM. Fakry fils and Girod de l'Ain, have published a treatise on wool and sheep. In this book there is a full statement of all the experience of the writers; in it is presented a new and profound analysis of the properties of wool, connected with the organization of the animals producing it, and the circumstances of their constitution and food; all taken in connection with observations made by the parties themselves of its applicability to manufactures. Then follows a description of the different processes through which the fleece passes; such

how rapid must be the increase of this improved race of sheep, and nothing seems to be wanting to a continuous regularly progressive spread of these sheep, but a further course of judicious efforts and spirited expenditure on the part of the agricultural proprietors.

M. le Vicomte de Jessaint, a proprietor of flocks at Beaulieu (Marne) who received the gold medal in 1827, exhibited some entire fleeces remarkable for their extreme and regular fineness of quality. The rams which each year are taken from the flock of Beaulieu have greatly improved a number of other flocks in the department of the Marne, and also in the neighbouring departments.

M. le Comte Hercule de Polignac (of Calvados) received the gold medal in 1823, and also in 1827 and 1834, for the care and perseverance with which he kept up his vast flock.

The official statement remarks for the second time on the superfine fleeces from the flock of M. Ganneron, which that gentleman has formed by purchases from the flocks of Malmaison, Perpignon, Arles, and Rambouillet. This flock already amounted to 1,575 head, which had been bred with the greatest care and attention on ground adapted to that purpose.

M. Dupreuil was in possession of a good flock at Souy, in the Department of Aube. This flock had then been established about thirty years, and numbered 3,400 head. However it is not remarkable merely because it is one of the most numerous in France. For more than ten years M. Dupreuil laboured with the greatest skill and perseverance to improve his flock; he obtained rams successively from the royal flocks of Rambouillet, of Zoune, which was established by the celebrated Ternaux, who imported sheep for that purpose, and also from the flock of Naz. Up to the present time a great many prize sheep have been brought before the public from this establishment.

M. Moet, of the Department of the Marne, exhibited several fleeces remarkable for their fineness and regularity of staple; with them were also shewn specimens of the same gentleman's wool in a scoured and also in a combed state, which were highly commended.

Messieurs Joseph Maître and Godin, of the Department of the Côtes d'Or, had flocks established from sheep brought direct from Saxony. These two gentlemen, with M. Durbach, of the Department of Tarbes, and M. Ternaux, were the only gentlemen who at that time had introduced into France the Electoral Saxon breed of Sheep. The fleeces exhibited by them were remarkable for their softness of texture and great fineness.

M. Monnot-le-Roi, of the Department of the Aisne, had for ten years been assiduously engaged in improving his flock by crosses from rams procured from Naz. The fleeces which he exhibited bore ample testimony to the progress he had made, and fully

as washing, purifying from oil, &c., sorting, classifying, and then the sale of the article. This work has been seven times translated into five foreign languages, and has convinced wool growers of the necessity of making themselves intimately acquainted with the different properties of wool, the advantage of improving the fleece in all its parts, in order, when it is sorted, it may produce the greatest possible quantity of first-rate wool, and ever to keep a strict eye upon the condition of the sheep producing this valuable article, in order to be able to note the causes operating upon the deterioration or improvement of its fleece. The observations in this work merit the best attention of all parties connected with the growth of wool.—M. CHAS. DUPIN.

justified the high estimation in which this flock is held.

M. Massin, of the Department of the Aube, showed some very superior fleeces, which resulted from his crossing his flock with rams procured from Naz. The judges of that exhibition reported that this gentleman had manifested great skill and industry in the breeding of his flock, and in the manner in which they were tended and kept. His efforts were reported to be continuously and remarkably successful.

M. Caille de Varastre, of the Department of the Seine and Marne, exhibited some fleeces in their oily unwashed state, which, although not of the first quality as to fineness and equality of hair, yet certainly attested great improvement.

M. Houteville, of the Department of the Seine Inferieur, also exhibited some fleeces commendable for their fineness and general good qualities.

M. Louis Graux, of the Department of Aisne, showed several fleeces, some of which were unwashed, and others washed, grown upon a particular variety of sheep amongst his flock, which he had for some years paid great attention to, endeavouring to give them a distinct character. He gave the name of *silk wool* to the specimens he exhibited, and they really possessed a silky texture, were exceedingly soft, and of a very bright appearance, and admirably adapted for the manufacture of the finest class of some particular kinds of stuffs. The judges expressed their anxious desire that M. Graux might succeed in regularly producing considerably larger quantities of this very precious variety of wool. J. H.

ON THE CULTURE OF POTATOES.

(FROM A CORRESPONDENT.)

The time of year having arrived when this most valuable root should in many situations be planted for a general crop, and as from observation I see but little attention is paid as to the procuring the heaviest crop, I would beg to give a few hints to potato growers generally, and leave them to adopt or not my plan, as they may think proper; but as it is simple, and will repay every extra expense, I should hope some one may be tempted to try it, which if he does, I am confident he will not repent.

It is I know customary upon a large scale to plough the land and make it tolerably fine before potatoes are planted, but still, if it is ploughed five, six, or seven inches deep and made fine and mellow, still at the bottom of such ploughing the land is hard and smooth, even in light lands, but how much more so where your subsoil is clay: and as the potato is a root that sends not out fibres only near the surface but deeply if possible, it can never produce such a crop as where the land is broke eighteen inches to two feet; quite different from the bean and wheat, which thrive best with a firm subsoil. The potato, like the cucumber, only enjoys itself in deeply pulverised soils, which causes them to flourish so much in well managed sandy land.

I should therefore recommend, that in all land where potatoes are to be grown, that if the land be either *springy* or otherwise *damp*, that it be drained deep enough to take off all springs or surface water. When this is done, the land should either be fully trenched, or bastard trenched, by the spade or plough, but I prefer the spade. By fully trenching, I mean to break the land up two spit deep, and by bastard I mean only to shovel off

the top weeds or rubbish and dig one spit and lay upon it when shovelled into the trench. When this is done by the spade, I should advise that your dung should in both cases be laid under the last spit which you throw up, this will prevent any further trouble, as you can then draw your drills (with a plough made for that purpose) not more than four inches deep; people can drop in the sets, and harrow them in crossways with a very short toothed harrow, or if otherwise you can draw in a few bushes to keep the tine from touching the potato so as to remove it. The width of the drills from each other, must depend entirely upon the goodness of your soil: the richer the land, the wider apart must be your rows and sets in your rows,—say in ordinary land rows at two feet from each other, and twelve inches from set to set may do; but if your land be very rich, three feet from row to row, and eighteen inches from plant to plant, will not be too much. This to some who are fond of close planting may seem a great waste of land, but in reality it is not so. I have heard people say, “such land is too good for potatoes, there will be nothing but haulm;” but although a large grower in good and bad land, I confess I never found any too good, nor yet too bad if properly managed, to grow good potatoes.

The error is, in planting good land you put in twice as much seed as is required; the consequence is, a great mass of haulm is produced, which by being so close together draws each other up; your land is covered by a mass of green which excludes the sun and air, and in dry summers sucks up all the moisture, and if any bulbs are formed, there is no moisture to bring them to perfection, and this is the true cause why in good rich land you do not obtain a crop; the fault, therefore, is not in the land but in the management of such land: the very same error is committed in sowing wheat and other grain too thick. In Scotland they sow some three and a half and some four bushels of wheat to the acre, and in England two and a half to three bushels to the acre; whereas one bushel properly put in is quite enough, provided your land has been made healthy by draining in the first place. We will suppose you sow three bushels to the acre; it comes up and looks beautiful, like a fine meadow in the end of April. The farmer smiles, and says, what a fine plant I have got; well, so it is, but as it covers the land completely at first coming up, how, I would ask, is the corn to come to perfection, unless a great quantity of it is destroyed in some way or another? No man in his right senses I suppose will say that a corn of wheat should be pinched into such a course that it can only send up *one* straw, and consequently but one ear, whereas it ought to produce forty, and more than this I have seen myself on poor land, where it had room to expand and tiller out; and the sample when it comes to hand will be much finer, and consequently will produce more flour, which is what is sought by every wise farmer. But when sown thick, especially upon good rich soil, the straw is drawn up to a great height, and then when strong winds and heavy rains descend, like the house built upon the sand, it falls, the corn does not come to perfection, the farmer complains, and all is bad together; whereas, if the corn had been sown *thin* upon good healthy land, each root would have tillered out into from twenty to fifty straws, each of which would have strength enough to stand the gusts of wind and showers of rain, and would yield fine plump samples instead of a poor, meagre, blighted crop; as I speak from actual

experience I care not who may treat it with ridicule.

But having set out upon potato planting, I must leave corn culture till another time.

I finished potato culture when the land was prepared by the spade, which I like best, and am persuaded, although it may and does cost a little more, will pay every extra expense in the extra crop which it will yield.

Men in clay or loam bottom will trench land two split deep for 8d. and lay in dung for 1d. per rod = to 9d. or 6l. per acre; and bastard trenching, which will do quite well in most land, may be done as above for 6d. per rod, or 4l. per acre, which is much better than even three ploughings, as the spade or spud leaves the land rough at the bottom of the trench, whereas the plough naturally leaves it smooth and hard. But if the land is to be prepared by the plough it ought to be trench-ploughed, that is, the plough must go twice in the same place or furrow, so as to break up the land if possible from sixteen to eighteen inches deep at least. Then if your land requires manure you must plough that in, which will be three ploughings, which cannot cost less in stony land than 2l. 5s., and unless your land is properly pulverised, it will require another ploughing; so that you will find, when you come to look at both expenses, a few extra bushels of potatoes will pay all the extra expense of spade culture, which is sure to produce them; however, in each case pay the same attention to distance in planting, and be sure *not* to plant small potatoes, but sets cut from large ones; as you will find small potatoes send up a good deal of haulm, and the bulbs in general are numerous and small too; whereas a set good size with one or two eyes, will send up one or more stalks, and the bulbs in general are large also.

Having given you the methods most likely to produce large crops, having tried experiments for twenty years, I will now tell you what I have seen grown upon very poor land, when properly trenched and manured with farm-yard dung; it produced 700 bushels to the English acre of 160 rods, which was more than enough to pay all expenses and value of land, and the land in good order for corn to succeed.

LEICESTERSHIRE AGRICULTURAL SOCIETY.

FIFTH ANNIVERSARY MEETING, 7TH DECEMBER, 1838.

The rank which Leicestershire holds amongst the grazing and agricultural counties of England, would naturally lead the public to suppose that the cattle shew could not fail to prove of a very superior description, both as to the quality of the animals shown, and the numbers considered of such excellence as to be qualified for competition. This expectation has been fully realised, and the exhibition in the Yard of the Bell Hotel yesterday, was of a character to elicit the utmost admiration of the grazier and practical farmer. It was not only the very best that Leicester ever witnessed, but has established for the Leicestershire Association a pre-eminent position amongst all the provincial societies. Most competent judges have declared, that the beasts exhibited yesterday were not merely a credit to this county, but to the nation also, and we are sure that every coming year will increase the high

reputation in which this anniversary is already held. After the exhibition, a large party of gentlemen assembled to partake of an excellent dinner. Upwards of three hundred and fifty individuals were present, comprising almost all the leading agriculturists in the county. Amongst them we noticed the following:—The Hon. H. W. Wilson, Sir W. Heygate, Sir G. J. Palmer, H. Halford, Esq., M.P., C. W. Packe, Esq., M.P., E. B. Farnham, Esq., M.P., Col. Cheney, Wm. Herrick, Esq., J. A. Arnold, Esq., R. Cheslyn, Esq., Thomas Walker, Esq., J. Bright, Esq., W. Martin, Esq., W. P. M. Owsley, Esq., Rev. J. M. Cooper, Captain Pochin, Messrs. J. L. Hassall, C. Stokes, J. Spencer, W. Hind, B. Simpkin, H. Chamberlain, G. Kilby, W. Simkin, &c.—After the cloth was drawn,

The CHAIRMAN rose and said, he did so for the purpose of expressing the great gratification he felt at seeing so many of the original members of the society present:—at seeing their numbers so increased and increasing. Such, he trusted, would continue to be the case so long as they adhered to the principle upon which the society was founded—that of excluding from their discussions anything of a party or political tendency. (*Hear, hear.*) The first toast, then, that he had the pleasure of proposing was, “The Queen,” (*cheers*;) and with it he would couple a sentiment with which he was sure they would all most cordially concur—May her reign be conspicuous for obedience to the laws; and may she obtain true glory to herself, and prosperity to the people. (*Three times three.*) This was followed by the

Toast of Queen Dowager, and the rest of the Royal Family. (*Three times three.*)

The CHAIRMAN, in giving the next toast—“The Army and Navy”—said, he was happy to remark that there were many gentlemen of both professions in the society, and he was happy also to see near him a new member—the gallant Colonel of the Greys, who distinguished himself and gained so much credit at Waterloo. (*Cheers.*) He had now turned “his sword into the plough-share” (*applause*;) and would, perhaps, give them some information on the subject of the sub-soil plough, one of which, he understood, the Colonel had procured for his farm at Gadesby. (*Hear, hear.*) He would give them the “Army and Navy,” and coupled with the name of Col. Cheney, and other Members of either profession who might be present. (*Cheers.*)

Col. CHENEY rose to return thanks. The gallant Colonel said, on the part of the army he begged leave to return thanks for the honour conferred on them; and he had no doubt their future conduct would be such as to entitle them to the fullest approbation—as it had hitherto done—of the country. (*Hear, hear, hear.*) He could not but express his gratification at the manner in which his name had been joined with the toast. With respect to the subsoil plough, it was true he had one; but he had not yet tried it, and had not, therefore, ascertained its merits. He should, however, before the next meeting, be able to do so, and would then give some account of it, and it would indeed be gratifying to him, if he could by such measures throw any light upon agriculture. The gallant Colonel sat down amidst loud applause.

Sir EDMUND C. HARTOPP, the High Sheriff of the county; a gentleman who had performed the duties of his office with so much credit to himself and benefit to the county, was the next toast, given from the chair, and was received with loud cheers.

The CHAIRMAN then said he had been entrusted with a letter from the Duke of Rutland, which he

would read to them. The letter was couched in terms expressive of the noble duke's regret at being unable to attend the meeting as he had anticipated; and stated his best wishes for the success of the society, and his anxiety to support it. The worthy Chairman concluded by proposing the health of the noble duke; and said he was sure they would drink it with that cordiality they had always done.—“The Lord Lieutenant of the county, our noble President.” (*Prolonged cheering.*)

The shepherds, labourers, servants, &c., to whom the prizes had been awarded, entered the room in groups to receive them. The Chairman, after reading over the names of the successful candidates, and the several prizes attached to their names, addressed them in appropriate terms expressive of the hopes of the society that they would continue in the same good course and incite others to follow their example. During the intervals that elapsed betwixt the different classes coming into the room, the Chairman gave several toasts.

In giving “Success to the Wool Fair,” he said, he had before done so, and had then made some observations. He would not, however, do so now; he would leave it to speak for itself. He begged they would bear in mind the remark made by one of the spirited buyers at the last meeting—“if we would only bring a good article, and plenty of it, we should not want buyers at a fair price.” (*Hear, hear.*)

The CHAIRMAN then said, the next toast he had to propose was that of a class of men to whom the society was much indebted, and who were intimately connected with those classes on whom they had just been bestowing the rewards. He had received a communication from the gentleman who usually responded to the toast—Mr. Morgan, of Rearsby—to the effect that nothing but a severe indisposition prevented his attendance. His heart, however, was with them, and deeply did he regret his inability to be present. At this time, when cheap publications are so much spread about, and those not having the best possible tendency, he could not but feel gratified on perusing a halfpenny pamphlet, which he had some little time ago, entitled “Who's the Parson?” The character of the parties to whom he alluded was therein so peculiarly and happily described that he could not help giving an outline of it as far as he could recollect. It stated therein that he (the person) is acquainted with the wants of the poor, though moving in the society of the rich: being the legitimate poor man's friend, not pandering to his prejudices or exciting his evil passions; but administering to his necessities;—advising in difficulties;—consoling him in affliction;—and pointing out, by precept and example, the sure path to lead him to happiness, both here and hereafter. (*Hear, hear, hear.*) They felt indebted, then, for the exertions of the clergy for signing their certificates, and pointing out those deserving objects whom they had the pleasure of rewarding, and who, but for those exertions would not have been here. (*Hear, hear.*) He therefore gave the Bishop and Clergy of the Diocese, particularly those who attend their meetings, and endeavoured to carry out the benevolent views of the society. (*Cheers.*)

Before the Chairman gave the next toast, he announced that a paper had just been put into his hands, containing a piece of information, the pleasure resulting from which he could not keep to himself. It was to the effect that the collection at the doors that day amounted to 32*l.* (*Loud cheers.*)

The CHAIRMAN said, the next toast required no comment from him, he should leave it entirely with

them—"The Members of the County." A simultaneous burst of applause followed the announcement of this toast, which was some time ere it subsided. As soon as silence had been restored,

H. HALFORD, Esq., M. P., rose to return thanks. He said, it was hardly necessary for him to dilate on the feelings under which he rose, though he should be sorry if he was supposed insensible to the honour done. Certainly he could not be so, if he were allowed to consider the flattering manner in which his name had been received in the toast just given as a token of their approbation of his public services. If in one word he could be understood as making the fullest acknowledgment which gratitude might dictate, he might sit down, having pronounced that word. When he considered the circumstances under which he rose—that he was returning thanks for that which had come from so large and influential an assembly of the agriculturists of this country, he would seem to carry with it something beyond a mere compliment. It appeared something like a challenge in the situation in which he was placed, to give some account of his conduct in the discharge of his duties with respect to the interests of agriculture, and of the views and arguments on which that conduct had been founded. All, however, he should say at present was, that whenever a favourable opportunity did occur of so doing, he should not be the man to shrink from it, (*Hear, and cheers.*) It was an opportunity which he coveted, and which he would embrace with eagerness and satisfaction. Yet he knew it was difficult to speak on matters purely agricultural without some party feeling, which was rightly interdicted here. He might, however, disclaim all such feeling, and any thing he might say would be received with that frankness and candour with which it would be uttered. The mere expression of opinions honestly entertained might not give any interruption to a meeting like the present, but he admitted the inconvenience that would arise by the introduction there of any element of debate or controversy. It remained only, therefore, for him to express the high gratification he felt in being allowed to participate in the immediate objects of the society. His habits would not allow him to enter into that active agricultural competition which had been entered into this place to-day; yet he was not the less sensible of the honourable nature of it, and its advantages for the public good, (*Hear, hear.*) There was one of their objects also, which secured to invest their society with something of a sacred character; he alluded, of course, to the rewards given to the labouring classes, he considered the rewards given to them as proofs of the public opinion of their services. They were pledges twice honoured, honouring those who gave and those who took them. In thus rewarding, they conferred a benefit on themselves, and set forth the example of efforts, without which the operations of agriculture could not be performed, and on which the comfort and order of society depend. To speak of these prizes as of reward in a pecuniary sense was ridiculous. The parties who received them are to be envied for their feeling in seeing this large assembly animated by sentiments of esteem and respect for them. The reward is in their own bosom, and in their own conscience; an example is afforded to their children; and a life is spent in the direct discharge of the duties belonging to their station. They are not much used, it is true, to meetings like this, or to the refinement of social intercourse, yet their virtues reflect on them honour, and self-denial is exercised amongst them for a series of years. Temperance, and fortitude, and independence amongst them, which

used to be lost amongst the lower classes, have placed them in a moral condition which birth, rank, and fortune, can hardly reach. (*Tremendous cheering followed the Hon. Member's speech.*)

C. W. PACKE, Esq., M. P., in rising, assured the meeting of the gratification he felt that the session of Parliament did not prevent him from attending on that occasion, as, he was sorry to say, it had done at the last anniversary of the Society. He said, that however much cause of self-gratulation the Society might have had at former meetings, the exhibition of that year had far exceeded their previous efforts, and proved that the objects of the association were more appreciated, by a larger competition for prizes. The Hon. Gentleman then alluded to the increase of the members of the society—and spoke of the Wool Fair as an institution calculated to prove of the utmost utility to the farmer, and especially to the small wool-grower. He concluded by declaring his determination warmly to support the interests of agriculture, and his great solicitude for the welfare of that Society,—and sat down amongst loud cheers.

E. B. FARNHAM, Esq., M. P., rose to offer his sincere thanks for the manner in which the toast had been received, on behalf of his Noble Colleague for the Northern Division, (whose absence he lamented,) and in his own name. He was particularly gratified that toast had been so well received by so numerous and respectable a Society. He was always happy to promote the cause of agriculture, but while he did so, he did not forget the manufacturing interests, with which its prosperity was inseparably blended. (*Cheers.*)

The CHAIRMAN, after some remarks upon the Wool Fair, in which he made honourable mention of the names of Mr. Jaques and Mr. Benjamin Simpkin, the winners of the prizes last year, gave "The health of Mr. Chamberlain, of Desford, the winner of the prize for the best Ox."

The CHAIRMAN then gave the health of the Earl Howe, to whose liberality they were indebted for the doe venison, of which they had that day partaken.

The CHAIRMAN then proposed the health of three gentlemen, to whose services the Society had been so much indebted; he gave the healths of Messrs. Parkinson, Umbers, and Bellamy, the Judges—(*Cheers.*)

Mr. PARKINSON returned thanks, and spoke of the sincere wish of himself and his colleagues to follow the instructions of the Committee. He enlarged on the difficulty of the position of the Judges, but urged their endeavours to give a conscientious decision, and said that such difficulty had been increased in proportion to the extra good quality of the stock exhibited. He concluded by giving as a toast, "Success to the Leicestershire Agricultural Society," which was received with loud cheers.

Sir W. HEYGATE then gave, by permission, the health of the Chairman, whom he described as a gentleman devoting himself to the agricultural interests of Leicestershire, with a degree of ardour, perseverance, and energy, which was seldom equalled, and never surpassed. (*Loud cheers.*)

The Hon. H. W. WILSON said, he never felt so much at a loss for words, as in returning thanks for the kind and flattering manner in which his name had been proposed and received, and that it would be his study to continue to deserve such good feeling. (*Cheers.*)

The CHAIRMAN then gave, "The Successful Candidates."

Mr. CHAMBERLAIN (of Desford) returned thanks,

and said he considered the stock superior not only in number, but in quality also, to that which had been exhibited at former meetings. He saw no reason why the show at Leicester should be second to any in the kingdom, and if it met with the support it deserved, it would be second to none. (*Cheers.*) He had entered one pair of oxen and two of sheep at the Smithfield show, but he did not expect success; still he thought it more honourable to show good stock, although unsuccessful, than to take premiums for want of competition; and if men could not bear to be beaten, they should not show at all. (*Loud cheers.*)

The CHAIRMAN then gave in succession, "The Secretary and the Stewards," "The Treasurer, Mr. Mansfield," "The Vice-Presidents of the Society," and other appropriate toasts, which were duly acknowledged. The festivity of the evening was sustained throughout with much cordial enjoyment, and the meeting separated amidst general expressions of gratification and satisfaction, at the prosperity of the Society.

Judges.—Mr. John Parkinson, of Ley Fields, Nottinghamshire, Mr. Thomas Umbers, of Waperrbury, Warwickshire, Mr. William Bellamy, of Hanslowe, Warwickshire.

PREMIUMS GIVEN FOR CATTLE, SHEEP, &c.

By the Society.

Class 1.—For the best ox, under five years old, of any breed or weight, open to all counties, without restrictions as to feed, a silver tankard, value 13 sovereigns.—Mr. H. Chamberlain, Desford.

By T. F. Turner, Esq.

Class 2.—For the best ox, of any breed, age or weight, bred and fed in the county, that shall not have had oil, oilcake, corn, pulse, seeds, or meal, previous to the 1st of August, 1838, a silver cup, value 10 sovereigns.—Mr. Chamberlain, Desford.

By the Right Hon. the Earl Howe.

Class 3.—For the best ox, under five years old, of any breed or weight, bred and fed in the county, without restrictions as to feed, 5 sovereigns.—Mr. H. Chamberlain, Desford.

By the Society.

Class 4.—For the best ox, under four years old, fed in the county, that shall not, after six months old, have had oil, oil-cake, corn, pulse, seeds, meal, or milk, (breeding open to all counties), 5 sovereigns.—No merit.

Class 5.—For the best ox, under four years old, bred and fed in the county, that shall not, after six months old, have had oil, oil-cake, corn, pulse, seeds, meal, or milk, 5 sovereigns.—Mr. H. Chamberlain, Desford.

Class 6.—For the best fat cow or heifer, of any breed, age, or weight, (open to all counties), without restrictions as to feed, 5 sovereigns.—Mr. Charles Mann, Leicester.

Class 7.—For the best dairy cow, fed in the county, that has produced a calf in 1838, and is either in milk, or has been regularly milked twice a day till the 10th of October and is supposed to be in calf, and that shall not have had oil, oil-cake, corn, pulse, seeds, meal, or milk, after six months old, (breeding open to all counties,) 5 sovereigns.—Mr. Needham Carnall, of Queniborough.

Class 8.—For the best pair of in-calved heifers, under three years old, bred and fed in the county, that shall not have had oil, oil-cake, corn, pulse, seeds, meal, or milk, after six months old, 3 sovereigns.—No merit.

Class 9.—For the best pair of heifers, under two years old, bred and fed in the county, that shall not have had oil, oil-cake, corn, pulse, seeds, meal, or milk, after six months old, 3 sovereigns.—Mr. H. Chamberlain, Desford.

Class 10.—For the best bull, under two years old, bred and fed in the county, that shall not have had oil, oil-cake, corn, pulse, seeds, or meal, after six months old, 5 sovereigns.—E. W. Wilmott, Esq., Pickwell.

Class 11.—For the best bull, of any breed or age, that shall not have had oil, oil-cake, corn, pulse, seeds, or meal, after six months old, and that has served cows in the previous season, in the county, at not exceeding half a sovereign each, (breeding open to all counties), 5 sovereigns.—No merit.

By Mr. H. Chamberlain.

For the best beast, bred and fed in the county, shewn in any of the above classes, (provided of sufficient merit) over and above any other premium which may be awarded, 5 sovereigns.—Awarded to himself.

By the Right Hon. the Earl Howe.

Class 12.—For the best pen (of three) under 22 months old, of long-woolled fat wether sheep, without restriction as to feed, and open to all counties, 5 sovereigns.—Mr. H. Chamberlain, Desford.—This class was highly commended by the Judges.

Class 13.—For the best pen (of three) under 22 months old, bred and fed in the county, of long-woolled fat wether sheep, fed on grass, hay, and green vegetable food only, 4 sovereigns.—Mr. Thos. Heap, Cossington.

Class 14.—For the best four ewes, bred and fed in the county, which have suckled lambs to the 1st of July, 1838, and have again been put to the ram, and supposed to be in-lamb, and that have never had oil, oil-cake, corn, pulse, seeds, meal, or milk, after six months old, and have been fed on grass only from the 1st of July, 1838, 4 sovereigns.—Mr. H. Chamberlain.—This class was commended generally.

Class 15.—For the best four theaves that have been put to the ram, and supposed to be in-lamb, and that have never had oil, oil-cake, corn, pulse, seeds, meal, or milk, after six months old, and have been fed on grass only from the first of July, 1838 (open to all counties); 4 sovereigns.—Mr. H. Chamberlain, Desford.—This class was highly commended.

Class 16.—For the best pen of five ewe lambs, bred and fed in the county, that shall not have had oil, oil-cake, corn, pulse, seeds, meal, or milk, after six months old, and have been fed on grass, hay, and green vegetable food only; 3 sovereigns.—Mr. John Spencer, Odstone.

Class 17.—For the best in-pigged or suckling sow, bred and fed in the county; 2 sovereigns.—Mr. John Moore, Aston Flamville.

Class 18.—For the best boar, fed in the county, (breeding open to all counties); 2 sovereigns.—Hon. H. W. Wilson, Alexton.

Class 19.—For the best fat pig, under 12 months old, bred and fed in the county; 2 sovereigns.—Mr. William Benskin, Rearsby.

By the Hon. H. W. Wilson.

Class 20.—For the best colt or filly, two years old, bona fide the property of a tenant farmer, and to be considered by the Judges as best adapted to the general purposes of agriculture in the county, a silver cup, value 4 sovereigns.—Mr. Charles Stokes, Kingston.

Class 21.—For the best brood mare, bona fide the property of a tenant farmer, and to be considered

by the Judges as best adapted to the general purposes of agriculture in the county; 3 sovereigns.—Mr. John Kendall, Burbage.

Class 22.—For the best foal as above; 2 sovereigns.—No competition.

By C. W. Packe, Esq., M.P.

Class 23.—For the best beast shown as extra stock, a silver cup, value 5 guineas.—Mr. John Buckley, Normanton-upon-Soar.

Class 24.—For the best pen of sheep, shewn as extra stock, a silver cup, value 5 sovereigns.—Mr. H. Chamberlain, Desford.

Medals for Extra Stock offered by E. W. Wilmot, Esq.

For the second best beast, to Mr. Joseph Hassall, Packington.

For the best Leicester ewe.—Mr. H. Chamberlain, Desford.

For the best two pigs.—Ditto.

THE REPORT.

In presenting their Report at this, the fifth anniversary of the Leicestershire Agricultural Society, to the General Meeting of its Members, the Committee have great pleasure in stating, that the proceedings of the past year have been such as to prove most unquestionably the growing utility of its Institution to all classes of the Agricultural Interest.

Among the most prominent of its benefits, none has been more fully demonstrated than that which has resulted from the last Wool Fair;—upwards of eight thousand fleeces were brought there and offered for sale, and all were disposed of; business having been done at the high price of 44s. per tod.—The Committee cannot help congratulating the Society upon the decided proof of the great advantage which both the wool grower and buyer must derive from the establishment of the fair; the briskness with which sales were effected having so completely justified the most sanguine expectations of its usefulness, and the recommendations the Committee had the honour in their last year's report to urge on the Society for its general and cordial support.

The Committee have the highest gratification in being able to report a considerable addition in the competitors for rewards of the Society to deserving Servants and Labourers, which is shewn by the number having been last year fifty-four, while that of this year has risen to *seventy-six*.—This large increase of claimants beyond the number in the previous year must prove alike most satisfactory to the members of the Society, and highly creditable to the poorer classes, for whose benefit these premiums are intended.

The Committee are happy in being able to announce to the Meeting that the funds of the Society have been increased by an addition of nearly Fifty new Subscribers. There was a deficiency in previous years' accounts of 49*l.* 12*s.* 2*d.* but that debt has been partly liquidated by extra liberal contributions amounting to 31*l.* 10*s.* and a small increase of expenditure beyond the income of the Society in the accounts of the present year amounting to 9*l.* 12*s.* 6*d.* has been met in a similar manner. The Committee have reason to hope that this cheering statement will be the means of inducing still more additional Subscribers, as the Society must be aware that the three primary objects of its formation, viz. protecting the Interests of Agriculture, encouraging by premiums the breed of Stock, and rewarding merit among the labouring classes, will be effectually carried out, and their usefulness beneficially extended, in proportion to the encouragement which the Society receives from the Landed Interest generally of the County.

KENT AGRICULTURAL COLLEGE.

(FROM THE MAIDSTONE GAZETTE.)

The advertised meeting of Thursday, March 14, was held, in the Town-hall, Maidstone. Present.—D. Salomons, Esq., Vis. Sidney, Sir Brook, W. Bridges, Bt., Sir Walter Riddell, Bart., T. Rider, Esq., Charles W. Martin, Esq., T. B. Brett, Esq., W. M. Smith, Esq., E. Hussey, Esq., G. E. Dering, Esq., J. Ellis, Esq., of Barming, W. Nicholson, Esq., B. F. Duppa, Esq., Rev. William Rham, of Berkshire, Rev. T. Ward, — Ward, Esq., W. Couhan, Esq., Henry Hoare, Esq., E. C. Tuffnell, Esq., James Whatman, Esq., R. Farley, Esq., John Mercer, Esq., — Croughton, Esq., — Taylor, Esq., G. G. Gipps, jun., Esq., Messrs. James Amos, Walker, Hatch, G. Cobb, Miles, Viney, G. Hughes, Love, Neve, Roots, Jarrett, Reeves, Barton, Tassell, R. Lake, &c., &c.

Much as we desire to give every possible assistance to this project, we are yet for want of space constrained to omit much of the speeches, some of which were of the most encouraging and gratifying character.

Viscount Marsham had been expected to preside, but being absent as a witness on the trial of Samuel Seager, the High Sheriff (D. Salomons, Esq.) took the chair.

The CHAIRMAN, in an appropriate address, opened the business of the meeting, in doing which he expressed his warmest wishes for the success of the proposed undertaking, and his conviction of its absolute necessity, in order to keep in advance of the efforts which were making in foreign countries, to compete with us, not only in our manufacturing but in our agricultural interests. The present was not a question affecting the interests of this county only—it was a national one; and he hoped that the intended institution would prove itself to be a model one for the whole country. As there were gentlemen present who were more able to enter into the details of the proposed measure than himself, in their hands he would leave the business of the meeting. (*Applause.*)

B. F. DUPPA, Esq. was received with cheers. He addressed the meeting in nearly the following terms:—In presenting myself for the purpose of explaining a plan for an agricultural college, I do so with more confidence, in consequence of that plan not only being generally approved, but revised and added to by many of the chief agriculturists in this county; and it is a singular and important fact that a want of the knowledge which it is proposed should be imparted there, is admitted in the strongest terms, chiefly by those whose acknowledged success in the practice of agriculture would point them out as living evidences that no such institution was required. Of all the occupations in which men engage for the purpose of gaining a livelihood by the application of capital, there is not one in which a large and varied stock of accurate knowledge is not only so desirable, but so absolutely necessary for obtaining the greatest return, as in farming. The operations which a farmer has to perform are not few and unvarying as are those of a manufacturer, who, having once taken up his ground with prudence, proceeds, hot and cold, wet and dry, snow and frost, in the same manner; his machinery or tackling is the same throughout the whole year—it is confined to one spot, performs the same operations, and works upon the same materials upon which its action always produces the same effects. The produce or crop of the manufacturer is thus certain; and he only shares with the farmer in the variations of the market. But these are not the

only points in which the manufacturers have the advantage; they live together in towns, so that whatever new invention is made, whatever improvement in process is discovered, all learn and adopt it simultaneously or nearly so. This is not the case with the farmer; he necessarily lives apart—his occupation prevents him from seeing much beyond what he does himself—so that it is only through hearsay and reading that successful experiments become known to him. Other counties can be rarely visited, while other countries can be scarcely so at all. The Belgians have made great strides in the practical improvement of agriculture, but how many persons are there in this room who have been to see what they have done? Belgium is but a few hours voyage from Dover, and a railroad transports the traveller from one part of the kingdom to another. Such are some of the difficulties of the farmer's position; what arrangements have been made to enable him to overcome them? Agricultural societies have been formed, at which there are exhibitions of produce, prizes are distributed, and ploughing matches take place. But much good as they have done, and are calculated to do, they go not to the root of the evil. No reward—no prize can bring more out of a man than he has got in him. We want something which will sink deeper than this; something which will place into the minds and habits of people that which we desire to come out. The only thing which I know of capable of effecting this is an education well adapted to the circumstances and future prospects of the individual. And this, from all I can learn, and the farmers themselves have been my informants, it is impossible now to obtain. But are the manufacturers, who as I have shown from their position to stand less in need of science than the agriculturists—are they idle on this head? have they been and are they doing nothing? In most of the large manufacturing towns throughout the kingdom, great efforts are making to give knowledge bearing upon the principles of the occupation of the place, not only to the manufacturer but to the mechanic. At Manchester, at Liverpool, at Glasgow, at Edinburgh, in the Potteries, in the mines of Cornwall, there are classes for mathematics, chemistry, mechanical drawing, and mechanics. They teach the strength and strain of materials, pressure on embankments, floating, engineering, and all matters which the wants or occupations of the locality make desirable; and at the school of arts at Edinburgh, a certificate is given to all pupils who have passed through the mathematical, mechanical, and chemical classes, and at an examination have shown that they have duly profited. Thus the portions of the population are pressing forward, and while they are doing so are we men of Kent to remain behind? God forbid! I rejoice from my heart at the exertions making elsewhere. It is only another reason for us to exert ourselves, if our own improvement and the increased produce of the soil are not of themselves sufficient reward to hold forth. With a view then of enabling the yeomen and others connected with agriculture in this country to give a superior and suitable education to their children, it is proposed to found a college of agriculture by the united strength of the county, which shall be so constituted as to afford all the facilities for the religious, moral, and intellectual training of a well conducted school, combined with the practical knowledge, practical skill, and the habit of close industry and attention, which can only be obtained upon a farm and in suitable workshops. In order to effect this object it is proposed to raise the sum of 15,000*l.*, by shares of 10*l.* each, which is to be applied to the purchasing of eight or ten acres of land, and erecting and fitting up a school and other

buildings requisite for the object in view, for 300 boys, and a limited number of young men. A portion of this sum will also be required for stocking the farm. The sum for which it is proposed to receive boys as boarders is 25 guineas and 2 guineas entrance. Young men who have not passed a series of years in the school would be required to pay a much higher sum, probably 75*l.* per annum; while if the college could fortunately be located in the immediate vicinity of Maidstone, many persons would probably be ready to avail themselves of the opportunity of sending their sons as day scholars—these might be received at 10*l.* per annum. It will be evident, from the smallness of the sum proposed to be demanded from each pupil, that the scheme would be impracticable unless by the aid of large numbers; 300 boys at 25 guineas and 25 young men at 75*l.* would be requisite for the purpose. But this would be sufficient, at any rate according to the calculations which I have made. For if the boarding of each of the younger pupils be calculated at 15*l.* per annum each, and that of 25 young men at 35*l.* per annum each, there would remain a balance of 4,015*l.* for the expences of the establishment, after the payment of boarding had been extracted. This sum it is proposed to distribute in the following manner:—

Interest of 15,000 <i>l.</i> at 4 per cent.....	£600
Head master's salary of 350 <i>l.</i> per annum, and 1 guinea for each pupil	665
Salaries of 9 under masters	800
Chaplain.....	100
Secretary	100
Repairs	100
Servants' wages	200
Boarding the establishment	500
Other expences, coals, washing, &c.	500
	3,565

Leaving 450*l.* per annum, besides 2 guineas entrance with each pupil for contingencies; the entrances of the first year would be 630*l.* Around the establishment there must necessarily be a farm. This it is proposed to hire, and some terms might, it is conceived, be made with a landlord anxious to forward the success of the plan, so that there need be no apprehension that the institution should lose the land at all events until a number of years shall have elapsed. It would be desirable to purchase, but this step would, it is believed, be impracticable at first. The number of acres suggested has been 300, but there are those who think that there should be a much larger number, among whom is Mr. John Lake, of Bapchild, who suggests 500 or 1000, in order that a great variety of soil may be obtained. Although an allowance of 3,000*l.* of capital is made for stocking the farm, no profit is calculated, nor even the interest of the money thus laid out; it is estimated that the produce will pay the rent, and no more. Although in making an estimate it may not be prudent to calculate upon profit, there can be no reason for supposing that there will be none. Experiments would, without doubt, be continually tried; they, however, would be restricted to a small portion of land, for it would be difficult to conceive how young farmers could obtain an idea of the advantage of persevering steadily in a tried course of husbandry, if the whole farm were to be continually made the scene of varying experiments. It will be an important business in the conduct of an establishment such as this, to shew how experiments ought to be tried, and successful results prudently adopted. The aim must be to make the great mass of the farm a model for the cultivation of land of a similar character in the most lucrative manner. And why, with the ablest of assist-

ance and the best of markets (for that would be found at home) it should not be productive, and highly so, it is difficult to say. It is desirable that we should investigate some of the items in the table of annual expenditure in order that it may be seen with what warranty the calculations have been made. And first, with regard to the sum of 15*l.* which is allowed for the board of each pupil. What data are there for making this calculation? They are as follows:—Enquiry was made at St. Paul's school, where it was found that the boys were boarded at a sum lower than is allowed in our calculations. These boys are, however, living in London, where it is conceived that the appetite is not so keen as in the country. I therefore requested a gentleman who farms in this county, who is in fact a yeoman, to produce a dietary to be drawn out by the farmers themselves, who would not be likely to be mistaken with regard to country appetites. He has been so obliging as to attend to my request, and the following is the dietary which he informs me has been approved by all the persons to whom he has shown it. The total expence for the year, allowing one month for vacation, is within my calculation.

A Dietary Table for a week, with the Prices of the Articles by the Gross.

	per day	per week.	per year.
	d.	s. d.	£ s. d.
<i>Breakfasts.</i>			
$\frac{3}{4}$ lb. of Bread	1 $\frac{32}{4}$		
1 oz. of Butter	$\frac{12}{21}$		
1 Pint of Milk & Water	—		
		1 5 $\frac{1}{2}$	3 15 11
<i>Dinners.</i>			
$\frac{3}{4}$ lb. Beef or Mutton & Vegetables	3 $\frac{3}{4}$		
$\frac{1}{4}$ lb. Rice, Suet, or Plumb Pudding...	$\frac{3}{4}$		
2 oz. Bread	$\frac{1}{4}$		
1 Pint of Beer	$\frac{1}{2}$		
		3 0 $\frac{3}{4}$	7 19 3
<i>Suppers.</i>			
1 lb. Bread	1 $\frac{32}{4}$		
1 oz. of Cheese	$\frac{1}{2}$		
1 Pint of Beer	$\frac{1}{2}$		
		1 8 $\frac{1}{4}$	4 7 2 $\frac{1}{2}$
	10 $\frac{12}{21}$	6 2 $\frac{12}{41}$	16 2 4 $\frac{1}{2}$
Allowing 1 Month for Holidays, which gives			1 4 9 $\frac{1}{2}$
			14 17 7

Flour, at 60*s.* per sack; Beef and Mutton, at 5*d.* per lb.; Butter, at 10*d.* per lb.; Cheese, at 9*d.* per lb.; Beer, 12*s.* per barrel.

The next item for consideration is the annual payment of 600*l.* for interest to the shareholders. It has been stated that interest to shareholders is a thing out of the question, and that whoever advances money must give it; that in other institutions for education which have been founded by the contribution of shareholders, such has been found to be the case; therefore it must be so here. The calculation which is here presented may certainly be erroneous—but interest to shareholders ought to be paid, and the calculations ought to be made upon such data as to secure it: and unless they are so, I for one shall consider them made upon a wrong principle. The next item is the salary of the head master. It has been proposed that he should have a fixed salary of 350*l.* per annum and a guinea a head with each pupil per annum, besides a house and some other advan-

tages. His situation would then be worth little short of 800*l.* per annum. This may at first sight appear high, but when it is considered that the person qualified for being placed at the head of such an establishment as is here proposed, ought to be not only of high scientific and general acquirements, but be a person capable of commanding respect and obedience, and securing the efficiency of all the subordinate departments,—it will be evident that the services of such a person could command the same recompence elsewhere. The profession to which I should feel inclined to look for the head of such an establishment would be the royal engineers. The item of 800*l.* for the under masters I have thus distributed, whether judiciously or not may be a subject for further consideration:—

Second master	£250
Third master or head bailiff.....	150
Fourth master	100
Six assistants at 50 <i>l.</i> each.....	300
	£800

Repairs are calculated at 100*l.* but all the repairs, if the establishment be placed upon the footing I desire to see it upon, will be done by hands to be found at home and in the school. The only expense should be for materials. But granting that the money can be raised, that sufficient pupils can be found to attend, and that the calculations for their board and education be correct;—how is this college to be governed? In principle it is a proprietary school, and proprietary schools have been failing in every direction. This is true. Before determining what the government of this college is to be, it would be desirable to ascertain the causes of failure of proprietary schools, and they are found to be owing,—1st. To the generally insufficient salary of the head master, which precludes the possibility of securing the services of a capable person.—2nd. In the intermeddling of the committee and parents with the government of the school. This necessarily interferes with system, weakens the power of the master, and renders the situation one which few persons of independent character will fill. If these are the evils, how are they to be avoided? It is proposed in the following manner, viz. That besides a president and vice-president, there should be a committee of fifty elected out of the body of the shareholders, and that this committee should elect out of their own body a small direction, which alone is to take any part in the government of the school—and even with regard to this small direction, it is proposed that it should have no more power than that of exercising a veto before the introduction of any plan of proceeding, and reporting to the general committee the general efficiency of the school in various departments. It is proposed to vest the whole power and responsibility in the head master, and upon the choice of this individual will the success or failure of the plan depend. Gross misconduct may be checked by citing him before a general meeting of the committee, by whom he can be dismissed; but it will be more easy it is conceived to find one individual, who will be able to make the college what its promoters desire to see it, than eight directors who by interfering will not do mischief. As the master is thus to be supreme in the school, and responsible for its character, it is necessary that no persons should act under him with whom he is not satisfied. It is therefore proposed that he shall have the appointment of all the under masters. But with whom is the selection of the head master to rest? It is conceived that it should

be with as few persons as possible. A large body is more likely to be acted upon by a canvas or a private solicitation, while its very number shields it from responsibility. If the number who make the choice be small, the duty is more likely to be felt, and the trust more likely to be executed as it ought to be. It is therefore proposed that the selection shall be made by the direction of eight, who shall recommend a person for election to the general committee. The general committee will then be a check upon the direction, who must show reasons for their choice, before the general committee can be expected to confirm it. As perhaps the appointment of the head master is the most important step to be taken, too many guards can scarcely be thrown around the election to secure the choice of a fitting party. *It has therefore been considered that it would be a wise precaution to fix beforehand the qualifications which should be required, and that the fitness of the individual in the required particulars should be attested by competent parties before the electors admit his name among those of the candidates.* With regard to instruction, as there will be lads of all ages in the institution, it will be evident that the English language, writing, arithmetic, geography, and other branches of elementary knowledge, must be imparted to the younger. When they have well mastered these, they will, it is conceived, proceed directly to those departments which bear immediately upon their future profession, and these must be principally chemistry, mechanics, the physiology of animals and plants,—all as applied to agriculture. In chemistry lies the secret of the manner in which manures act upon different soils, and soils upon each other. In mechanics lies the secret of economizing power of every description. In the physiology of animals and the physiology of plants lie the secrets of choosing and treating animals. While in the physiology of plants lie the secrets of generating and rearing plants in the greatest perfection, and placing them in soils suitable to their respective natures. Besides intellectual instruction it is proposed to endeavour to effect two other things—to give our young pupils skill and the habits of industry. It is proposed that they shall be practised in such of the arts as are subservient to agriculture; as carpentry, smith's work, building, surveying, draining, and irrigating; that from an early period of life the boys shall be trained to the practical application of what they learn, and that while a portion of the day is devoted to the school-room, another will be given to the workshop, the garden, and the field. It is scarcely possible to calculate the effect which such skill possessed by the farmer would have upon the whole race of artisans throughout the country districts. No farmer who could himself use the tools of the carpenter—no farmer who could himself shoe a horse in a proper manner,—would tolerate what was clumsy and unworkmanlike in the carpenter and the smith. The farmers would know what was right, and they would have it done. But if here in England such advantages would accrue, how much greater would they be in the colonies? There oftentimes the skilful workman cannot be procured at all; and the colonist, who possesses not skill and ingenuity enough to do a thing himself, must be content to have it not done at all. Young men brought up at an institution such as that now proposed will be the best and most independent of emigrants. Perfectly acquainted with rural affairs, and possessed of skill, they will be able to train the rude and helpless beings now flocking to the colonies into skilled and useful members of society. For the purpose of ensuring efficient religious instruction, it is proposed that a

clergyman of the church of England shall be appointed chaplain; the school being open to the reception of the children of dissenters, who, if the parents desire it, may be exempt from attending the religious instruction to be given by the chaplain. I have thus, gentlemen, (continued Mr. Duppa), given you as lengthened a statement of what is proposed as I could venture to do. I believe that I might have succeeded in giving this plan a trial in another county; but I was determined that the plan which I had designed, you at all events should have an opportunity of refusing. Now that so many influential persons have come forward to support it, I do feel a confidence in its success, and in its success it is my conviction that not only this county, but the agriculturists throughout the land, are interested. It is the one thing needful to place agriculture upon that high footing which belongs to it; and as a man of Kent, I rejoice that Kent will be the county to take the lead. Her place in ancient times was in the van in arms, let it be hers too now in peace;—a more glorious pre-eminence, although not so dazzling. It requires but a deep conviction of the usefulness of the thing, and a strong will to do it, and it will be done. As for difficulties, there are difficulties in the way of everything that is worth attaining. Let us not shrink from them, but meet them fairly, and depend upon it they will yield to us. (*Long continued cheering.*)

Sir B. W. BRYDGES, in moving the first resolution, said that it was impossible for them not to be aware of the difficulty which the cultivators of the soil, not only in this, but in every other district of the united kingdom, had in obtaining scientific knowledge relative to agriculture. It was most desirable that this lamentable deficiency should be remedied, not only for the interest of the agriculturists themselves, but of every other class whom agriculture enabled to live. The hon. baronet made several pertinent and powerful observations in support of the plan, and earnestly recommended all present to impress on their friends the almost incalculable advantages which the support of this institution was likely to secure to them, and concluded by moving the first resolution.

T. RIDER, Esq. expressed his hearty concurrence in the project, which was likely to benefit not only the farmer but every other class. He should not attempt to say anything in its recommendation after the powerful address of Mr. Duppa, to whom the county was most deeply indebted for the wisdom and intelligence he had displayed in projecting and bringing forward the valuable plan. (*Cheers.*) The projected institution might succeed or not—but of this he was certain, that whether it would succeed or not, would depend entirely on the farmers themselves. (*Hear.*) It would rest with them whether or not in this matter Kent would set a valuable example to the whole kingdom. Once more expressing his most earnest wishes for the success of the plan, he concluded by seconding the resolution. —(*Cheers.*)

After a few words from Mr. HOARE, relative to the prospect of the institution succeeding,

The Rev. W. L. RHAM observed that he had been requested to state to the meeting what he had observed in similar institutions on the continent, and their effect on the improvement of agriculture wherever they had been established. In England we had had for a long time little or no communication with the continent, and our farmers were entirely unacquainted with the improvement made in other countries. But this was not the case on the continent. By means of institutions, chiefly sup-

ported by the governments, where agriculture was taught in theory as well as practice, every work of any value which appeared in England was examined, and, if it contained any practical improvement in the mode of tilling the land, was immediately translated and distributed in a cheap form. In Austria a book containing the elementary principles of agriculture is, by command of the Emperor, taught in every parochial school—as a subject, useful and interesting to every class of men, whether practically engaged in the cultivation of the soil or not. In Prussia the establishment of an agricultural college at Möglin on the Oder has been the means of training a great number of men in the best practices of agriculture; and while they learnt to hold the plough and to observe minutely its mode of action, they had sufficient science to discover defects and suggest improvements where these were practicable. M. Von Thair, who was long at the head of this institution, wrote a most valuable work on husbandry, which has been read and translated into almost every language; but for want of institutions in this country which directed men to every source of agricultural knowledge, it has never been translated into English, and, till lately, was scarcely known. It is called “Principles of Rational Husbandry.” The pupils from the school of Möglin have been dispersed through the country, and have greatly improved the agriculture of Prussia. In Switzerland an institution for training young men in a knowledge of practical and improved husbandry has been established at Hofwyl, near Bern, by a well known and justly celebrated individual, M. De Fellenberg. Here general education is combined with agricultural instruction, and this institution is remarkable by having been established and maintained by an individual without any assistance, excepting some trifling advances by the government of Bern, which have probably been repaid in a very short time. The labor of the pupils amply repays the expense of their maintenance and instruction. In the class of those who receive gratuitous instruction, labor occupies the greatest portion of the time of the pupils, and the instruction is proportioned to the station in society which the pupil is likely to fill, or in which his parents are placed. The principles on which the instructions in the intended college in this county is proposed to be conducted, approaches more nearly to that of Hofwyl than any other. There is a celebrated school of agriculture at Roville, not far from Nancy, in France, where M. de Dombasles trains young men in the theory and practice of agriculture; and these, afterwards dispersed through the country, introduce improved practices, and will soon raise the agriculture of France to a level with that of the most improved countries; for it must be acknowledged, that, in consequence of the wars and revolutions which have for so many years distracted that fine country, agriculture had been woefully neglected, and was not to be compared with that of the surrounding countries. (*Great cheering.*)

Viscount MARSHAM was not at all discouraged by the thin attendance of the farmers, who were much engaged on that day, and doubtless had been obliged to attend their business elsewhere; he was decidedly of opinion that it was desirable to establish an institution on the principles of the plan proposed. (*Cheers.*) He knew several good farmers who used their own land, and probably got as much out of it as could be got under the college instruction; but if those same persons were to be taken away from that land and placed on different soils, they would be completely at sea. The object of this in-

stitution would be to teach farmers how to deal most profitably with any, the most inferior soils. He most cordially supported the plan. (*Cheers.*)

Sir W. B. RIDDELL eloquently supported the project, and stated that Lord Marsham, himself, Mr. Brett, and Mr. Tuffnell having joined Mr. Duppa with a view to assist his arduous exertions, communication had been held with some of the first persons in the county, who had unanimously approved of such an institution, together with all persons interested in the success of agriculture who had been consulted. The Hon. Baronet then read and referred to letters from the Archbishop of Canterbury, the Bishop of Rochester, Lord Bexley, Viscount Sydney, and Lord Sondes, who all concurred in their approval of such an institution. Earl Spencer, who is President of the British Agricultural Association, Lord Western, Earl Brecknock, Lord Radnor, Duke of Richmond, Lord Chichester, Earl Winchelsea, and the Marquis of Lansdowne, had also expressed their conviction of the utility of some such institution as was then proposed, as also had Mr. J. Lake, of Bapchild, and several other eminent agriculturists. Looking as he did at the immense number of persons who were interested in supporting it in order to procure a suitable education for their children, not only in this but in other counties, and even other countries; considering the number of persons of all conditions of life who were now sending their sons out to the colonies,—he could not entertain a doubt of the ultimate success of the Kent agricultural college. (*Cheers.*)

Mr. BRETT called the attention of the meeting to the fact on which they were all agreed, namely, that there could be no doubt of the lamentable deficiency that existed of facilities for procuring scientific agricultural education. A perfect remedy for that deficiency was offered by this institution. A very large number of gentlemen had consented to take shares in the undertaking; indeed raising the money was the smallest difficulty they had to contend with. It had been determined that this institution should not be dependent on persons of high station, property, and influence; but should be supported by the yeomanry and all persons connected with agriculture; and the proposed committee, whose duty it would be to prepare estimates and lay them before a general meeting, contained a preponderant number of yeomen, being formed of 25 yeomen, 15 other persons, five magistrates and five clergymen. At present the subscription list had been confined to Kent, but if it were desirable many other gentlemen were anxious to support the proposed institution. (*Cheers.*)

The resolution was passed unanimously.

C. W. MARTIN, Esq. after some remarks on the fulness of the dietary, and the cheapness of the sum—twenty-five guineas per annum—proposed. Mr. Martin alluded to the advantage it would be to our future farmers to possess a competent knowledge of chemistry, to enable them to analyse soils, an amount of knowledge to be readily acquired by every person of ordinary capacity.

The resolution was seconded by Mr. GEORGE COBB, and passed unanimously.

The other resolutions were severally proposed and seconded by Mr. E. HUSSEY, of Scotney, Mr. J. ELLIS, of Barming, Sir W. RIDDELL, and Mr. NICHOLSON, and carried with equal unanimity.

A vote of thanks was passed to the Rev. W. L. Rham, who attended from Wingfield, Berks (where he has established a somewhat similar school on a small scale), to give his assistance at this meeting.

The meeting then adjourned.

ON THE SELECTION OF SEEDS, ROOTS, &c.

In my last communication contained in your paper of 25th ult., I referred to the period when turnips were first introduced into Scotland, and unquestionably the prejudice and ignorance which then prevailed regarding any new improvement renders the merit of those individuals the greater in persevering with the cultivation of so valuable a root.

Though prejudice for a time rendered the cultivation of turnips limited, yet they have been gradually extended until they now enter into the rotation of almost every farm whose soil will admit of their cultivation. The common, and indeed only sure and profitable method of growing turnips in this country, is by the drill system, and which method we believe should be more generally resorted to by our southern neighbours, for independent of the opportunity thus afforded of getting his ground properly stirred and cleaned by animal labour, the manure itself is so much concentrated into the drills that the young plants at once receive the full benefit of it. It is indeed in our opinion more to our system of drilling that we would ascribe the Scotch farmers' success in being comparatively little troubled with that pest of the English farmer the "turnip fly," than to any difference in our climate, &c. For it is evident that the seed being deposited right above the manure the plants will start more vigorously than if they were sown broadcast, and of course have a greater chance of escaping the ravages of the fly.

In Lawson's Manual of Agriculture there are forty-six varieties of the turnip enumerated, which may be said to be all more or less cultivated in Great Britain with various success, and although we must allow that a great and decided improvement has taken place in both the quality and size of the turnips of late years, still we believe that neither the cultivation nor improvement of the different varieties has been carried to that extent of which they are susceptible.

There is a peculiarity connected with the Swedish turnip which does not seem to be possessed by any other variety, excepting perhaps some of the hybrid sorts. I allude to the difference of nutritive matter contained in them compared to other varieties according to their bulk. While the nutritive matter in the common white turnip is diminished so soon as it attains above a medium size, that of the Swede increases according to the bulk of the root. It is remarked by Mr. Sinclair (*Hortus Gramineus Woburnensis*) that the quantity of nutritive matter contained in different roots of the same variety varies according to the size and texture of their substance. A root of the white leaf variety measuring seven inches in diameter, afforded only seventy-two grains and a half, while the same quantity of a root which measured only four inches afforded eighty grains.

The middle sized roots of the common turnip are therefore the most nutritious, as, on the contrary, are the largest roots of the Swedish turnip affording 110 grains, while the middle sized or smaller roots afford only 99. In corroboration of Mr. Sinclair's experience, we would refer to the observations of an agriculturist from Van Diemen's Land in regard to the habits and growth of the Swedish turnip in that country. In 1835 in a field of 25 acres, the roots of which averaged from 8 to 10 lbs. each, there were some plants very large and which weighed 60 lbs. exclusive of tops and tails. Although the general quality of the Swedes upon this field could perhaps

not be excelled, yet it was remarked that these large roots were equally hard and firm, if not more so than those of a medium size, and when struck with a spade they went to pieces in splinters like a piece of flint. The seed had originally been received from Aberdeenshire, but was in Van Dieman's Land for nine or ten years previous to this crop, and during that period the roots were annually selected and transplanted for seed. A hybrid variety has also been cultivated to advantage in that country; some of the roots weighed about 40 lbs., and what is very remarkable, by merely touching the side of the plants with the point of a knife, the whole root will crack like a piece of glass. The seed of this variety was also procured from Aberdeenshire.

The Swedish turnip is no doubt a great acquisition to the husbandman, and it may upon the whole be considered equally if not more deserving of attention than perhaps any other variety; notwithstanding which, however, its cultivation has hitherto been comparatively speaking little attended to in many districts of this country. There is one circumstance connected with the profitable cultivation of the Swedish turnip which must always operate to a certain degree against their being cultivated so largely as the common sorts, namely, the necessity of applying about one-third more manure than what is requisite for maturing a full crop of the other varieties. This extra quantity of manure also is not at all times convenient for the farmer, neither is it absolutely necessary for maturing the following cereal crop, for we generally find the corn crop as bulky and of as good quality after the common sorts with one-third less manure, as that of the Swedes with a larger quantity. This circumstance may tend to shew us the advantages to be derived from procuring hybrid varieties between the Swedes and the white or yellow turnips, which may be found to combine the size and symmetry of the best varieties of the latter with the valuable properties belonging to the former; for it must be admitted that there are only certain soils and situations in this country where the Swede can be cultivated to advantage.

We have already several valuable hybrid varieties, and amongst those deserving the attention of agriculturists we may class Dale's Hybrid Turnip. This variety is a mule or hybrid between the green top Swede and white globe, procured by repeated impregnation. It however, bears a much greater affinity to those of the common sort than the Swede, in as much as its leaves are also rough, and of a vivid green colour, and in its roots being somewhat similar in form and texture. It has received the name of Dale's Hybrid from being first raised and brought into notice by Mr. Robert Dale, an intelligent farmer at Libberton West Mains, near Edinburgh, who having in 1822 or 1823, received a few ounces of seed of a new hybrid variety of turnips, from the late James Shireff, Esq., of Bastleridge, Berwickshire, sowed the same; the produce he found to resemble very much the Swedish in shape, and from which by repeated selection and impregnation he at length obtained this esteemed variety, the distinguishing characteristics of which are, foliage strong and luxuriant—roots of a large size, oblong shape, and of a lightish yellow colour with light green top, having also a small neck and tap root. The shape of this root however, although generally oblong, is rather apt to vary, being sometimes almost globular, but its more material characteristics of large size and luxuriance of growth are uniformly the same. Compared with any other of the common yellow field sorts, it is found to arrive sooner at maturity, and consequently may be sown at a later pe-

riod of the season, while at the same time it is nearly equally hardy, or at least has been found sufficiently so to withstand the severest winters which have occurred since its introduction. There are other hybrid varieties which all partake more or less of the Swede, and it is gratifying to know that experience has already proved the almost unlimited extent to which we can obtain new and improved varieties by impregnation, and it would certainly prove a matter of profit as well as of utility, were more attention directed to this object, for, notwithstanding the improvement in some of the sorts already in cultivation, a variety partaking more of the nature of the Swede would prove highly beneficial, more especially to those farmers who find it impracticable to mature the Swede even with an extra quantity of manure, owing to their soil and situation; but in the event of a hybrid this difficulty is often overcome without the necessity of applying any extra quantity of manure. There is, however, another process connected with turnip husbandry, which is essential to the successful cultivation of this crop. We allude particularly to the necessity of always selecting and transplanting the best and purest roots for seed. We do not mean to infer that there are any advantages to be gained by transplanting the roots, as we believe this is only necessary for the convenience of the farmer, and that the whole virtue lays in the selection. Indeed the importance of this measure has been well exemplified in the practice of many excellent seedsmen and farmers, but few have carried it to that extent which is necessary to obtain a pure and characterized variety, for, unless the system is persevered in from year to year, it may be presumed that no variety whatever will continue to retain its original character. The advantages to be derived from a continued and careful selection, is brought to our immediate notice by the success which has attended the exertions of Mr. Dudgeon, an extensive and enterprising agriculturist now on the estate of Tyndal Bruce, Esq., Fifeshire. In 1804, Mr. Dudgeon procured some white Globe turnip seed from Berwickshire, and in 1805 commenced selecting and transplanting, and has continued that system up to the present time. From 1805 to 1819 some spurious plants appeared, which were only discernible when they were in bloom, by appearing of a different colour from the pure sorts. Since 1819 the plants have always, every year, been minutely examined, but without detecting the least impurity. In 1834 and 1835, Mr. Dudgeon grew a quantity of seed for sale from turnips grown from his selected seeds, but without selecting the roots, which he sold to Messrs. Dickson and Co., Lawson and Son, and Cleghom, seedsmen, Edinburgh, who all agreed that it was the purest seed they ever had, and several farmers who procured it from them, were enabled to carry off several premiums at the different agricultural competitions. Mr. Dudgeon, however, gives a decided preference to selecting the roots every season, as he invariably found the crop more equal and of greater value when grown from unselected seed. Mr. Dudgeon also, for a period of twenty years directed his attention to the selection and purification of the Swede, and brought them to such perfection in size, shape, and uniformity, as has seldom been equalled.

There is not the least doubt that much trouble and attention is necessary to mature and perfect turnip seed of the description to which we have alluded, but it will be observed that whatever difficulty may, at the commencement, present itself, is every year lessened as the selection proceeds, according to the care and experience of the selector, and of course the same favourable result would be the consequence

of every well conducted experiment when judiciously and steadily persevered with. Indeed the system is so plain, and the utility of a continued selection so palpable, that it may be a matter of wonder to many why our seed growers do not pursue a similar method to that of Mr. Dudgeon. But the question just resolves itself into this—are the farmers prepared to give a remunerating price for this pure and selected seed? We unhesitatingly say, no! For, with due deference to our brother agriculturists, we are rather inclined to believe that the great majority of them are not yet sufficiently acquainted with the benefits to be derived from having a pure and selected variety of seed, so as to be prepared to give a comparatively higher price for it than what is generally exacted for the common runs by the seedsman. It must indeed be allowed, that the system which the seed growers now pursue is a decided improvement over that of the old plan, when the roots from which the seed was to be derived were seldom or never selected. This slovenly method, although still to be seen now and then, in different parts of the country, may be said to be nearly exploded, and the more eminent seed-growers now adopt the plan of selecting the best plants from a field of turnips for the purpose of maturing the seed. This seed is then sown the following season, and the whole crop of turnips allowed to mature their seed, which is then considered, without further selection, sufficiently purified for the market. It will thus be observed that the seed which is presented for sale is not directly from selected roots, but only the produce of that which had been selected the previous season; but how far this may be adequate to obtain a pure and uniform crop will be observed from Mr. Dudgeon's practice, where it took nineteen years' selection before he got all the impure sorts eradicated. We cannot, however, blame the seed growers for not carrying their selections farther, for there is not the least doubt but that many of them are not only eminently qualified for the task, but are also willing to bestow the necessary attention, were their services properly appreciated and their trouble remunerated. But even suppose some of them were to commence raising seed for sale from plants annually selected, it surely would be unreasonable to expect the seed at the same price as at present; on the contrary, the expence would be doubled, and the consequence would be, that the comparative high price of the superior seed would be sufficient to prevent the majority of farmers from purchasing it, and this will be always more or less the case until agriculturists obtain a more extended knowledge of the manifold advantages to be derived from having all their seeds and roots of a pure and superior character.

If, then, there is any one circumstance more than another which points out more forcibly the necessity of a National Experimental Establishment, it is the facility with which it could give practical proofs of the advantages that would result to agriculturists from only growing their seeds and roots from selected and characterized varieties.

An experimental field would at once present to the farmers the practical details of every circumstance connected with improvement, and by comparing in practice any new theory he would at once be enabled to judge of its utility. We might, for instance, suppose that two acres of turnips were practically tested, the one acre raised from seed selected for a period of years, and the other from seed which had been raised according to the present practice of the seed growers. Now the difference in value betwixt the two acres would probably be from

one-third to one-fifth in favour of the turnips on the selected acre; and if we farther suppose the value of the one to be ten pounds per acre, and the other only eight pounds, but that the selected seed cost 5s. per acre and the other only 2s. 6d., we have here a saving of 37s. 6d. on a single acre. Such practical examples could not fail to have a very beneficial effect in opening the eyes of the agricultural community to the value of these ameliorations and improvements, and such practical experiments disseminated throughout the country would be attended with the best results.

In this country the varieties of the common beet, or mangel wurzel, have hitherto received a rather limited share of cultivation; not so, however, in some counties in England, where their qualities are more justly appreciated. One reason why they may not have hitherto received a greater share of attention is from an opinion being prevalent, that, however well field beet may succeed in England, the climate of Scotland is, to a certain degree, unsuited for their growth. Judging, however, from the result of trials which have been instituted at various times, and in different districts, there seems every reason to believe that the general knowledge of the merits of the different varieties, and perhaps the removal of a little prejudice on the part of agriculturists, is only necessary to ensure its more extended cultivation.

The importance of attending to varieties of cultivated plants has been duly pointed out by Mr. Bishop, at once a scientific botanist and a practical gardener:—"By means of varieties," he says, "the produce of our gardens and fields are not only increased in a tenfold degree, but the quality of the produce is improved in a still greater proportion, and the difference between varieties that have sprung from the same species fit them for different purposes, and for different soils, situations, and climates. Thus in edible plants and fruits, we are supplied with an agreeable change throughout the year, from a difference in varieties that have sprung from the same species. In the earlier ages of the world, no idea could have been entertained of the excellence some of the varieties have attained over their originals. Who upon viewing the wild cabbage that grows along our sea coast, would ever imagine that cauliflowers or broccoli would have been produced by the same? Or who would expect the well formed apple of a pound weight from the verjuice plant in our hedges? Many instances might be noticed of original species that are scarcely fit to be eaten by the beasts of the field, the varieties of which afford a wholesome and nutritious food for man. Indeed, nothing is more obvious, upon comparing original species with their varieties produced by culture, than that we, by means of the latter, enjoy a vegetable food far preferable to that of our forefathers; and as it is probably beyond the power of man, of cultivation, or of time, to determine the degree of excellence attainable by varieties over the species whence they have sprung, and as that degree is unknown we are justified in regarding it as progressive, and in considering the production of a good variety as the sign or harbinger of a better."

The different species and varieties of grasses now present themselves for our consideration; but whether we look to the important though diversified nature of the subject, or the degree of ignorance which prevails amongst the agriculturists respecting the merits of the different plants, or their general apathy toward obtaining a more extended knowledge of their various qualities and habits of growth, we cannot but feel impressed with our inadequacy for properly discussing the merits of this question. It

will, however, require little argument on our part to show that our various soils can never be cultivated with success or to that advantage which is necessary to their full development, until the agricultural community are better instructed not only with regard to the nature and capabilities of the different soils, but also with regard to the qualities, habits, and tendencies of the different seeds and roots, so as to be enabled to place them in those soils and situations most congenial to their growth. Our backwardness to avail ourselves of the bounties of nature will be more apparent if we only consider the numerous varieties of grasses which are at our disposal, but which have hitherto received but little attention, even although the necessity of combining many sorts together, for the purpose of laying land down to permanent pasture, is rendered obvious, if we would only examine the different varieties of grasses which the old natural pastures contain, and which are every day presented to our view. But whatever may be the degree of carelessness evinced by us in selecting proper grasses for pasture, we find a similar apathy prevailing with respect to those varieties more particularly applicable for the alternate system of husbandry, for there cannot be a doubt, if sufficient attention were directed to this important matter that many valuable sorts might be procured which would effectually obviate that objection which has hitherto proved the only barrier to the soiling system. We allude to the difficulty which is at present found in obtaining a regular succession of green food. If this objection could be obviated, we are convinced that no system could be devised better adapted for fertilizing the ground than soiling, for, however beneficial and necessary artificial manures may have hitherto proved to the extension and improvement of the alternate system of husbandry, yet for economy and efficiency, they can never be compared with soiling, and were this practice extended and properly conducted, the productive powers of the soil would be greatly increased and the artificial manures rendered comparatively of little value. The biennial red clover has hitherto been the most valuable plant cultivated in this country for the purpose of soiling, but its value is very much impaired from the circumstance of a certain period being necessary to elapse before this crop can be again repeated on the same ground with any prospect of success. It is however worthy of remark that if a certain period be allowed to elapse between the crops of red clover, that the power of the soil is restored and the produce all that could be wished. The number of seasons necessary for this purpose will of course vary according to circumstances, but we believe on an average of soils that seven years will be found sufficient between the different crops, but there is no doubt that the more distant they are kept from each other the more certain will be the return. It is not even necessary that any particular mode of cultivation be adhered to during the interval between the clover crops, provided the extirpation of weeds be attended to, to render the clover again congenial to the soil. That a substitute, however, perhaps equally valuable might be obtained, were attention properly directed to the subject, we have every reason to believe, for as Mr. Gorme observes "out of more than two hundred grasses suitable to our climate, it may be said only one genus, the rye grass, has as yet received general culture. From among sixty species of clover, only three or four species receive general attention. Of the genus *lotus* sixteen species are hardy, and in waste lands two species contribute to enhance the value of the pasture, but in agriculture they are seldom noticed. The species of *melilot* are as numerous, many of which vie with our com-

mon clover, and form excellent substitutes when land gets clover-sick, yet that genus is almost quite neglected. The same may be said of many species of vicia, lathyrus, orobus, medicage, and other deadelphous plants, which point out the apathy and remissness of the farmer."

It will be observed from the above extract that the different species of grasses are very numerous, and all that we want is a knowledge of those sorts which are more particularly valuable for different soils and situations. Among those who have turned their attention to this subject, and have thoroughly tested and examined into the habits and tendencies of the several species, Mr. Sinclair stands pre-eminent. In his *Hortus Gramineus Woburnensis* is detailed several experiments which were instituted for the purpose of ascertaining the qualities of the different grasses most commonly employed as food for the more valuable domestic animals. By a simple chemical process Mr. Sinclair shews, that the nutritive matter of grasses or soluble products consists of mucilaginous, saccharine, albuminous, bitter, extractive and saline substances—that it appears probable the two last serve only the purpose of preventing, to a certain extent, the fermentation of the other vegetable matters in the stomach, or in modifying and assisting the functions of digestion; and therefore, though not directly nutritive, are of great use as a constituent part of the food of cattle. In order to prove this point, and to shew generally the importance of having a mixture of such grasses as possess some difference in the qualities of their nutritive matter, Mr. Sinclair states that two fields were sown down for pasture, one with white clover and trefoil, and the other with a variety of the natural grasses, such as cock's-foot, rough-stalked meadow-grass, rye-grass, foxtail, and white clover. The two fields were depastured with sheep; in the first a quantity of cock's-foot grew on the edge of the fence of a very harsh quality, and consisting entirely of culms; in a few days the sheep went to this grass and ate it down entirely, although there was plenty of white clover; and in the course of time many of them became affected with red water, and several died. In the second field the sheep remained free from every disease, and left untouched the stems of the cock's-foot, which were here of a more tender and succulent nature. This, then, is a most important fact, as it shows the necessity of having a variety of different grasses in the same field, in order to preserve the health of the animal, and enable it to derive the full benefit of the richer and more succulent herbage. This indeed may be termed the fundamental position of Mr. Sinclair's work; and the various experiments he instituted, whether in respect of the soil, the nature of the grasses, the laying down of permanent pasture, &c., are all corroborative of it. For example, the richest natural pastures in England are composed of twenty-six different grasses, which proves the absurdity of the modern practice of sowing with two or three. An attentive examination of these pastures warrant the belief that grass seeds are generally sown by far too thin; one superficial square foot of rich old pasture in Lincolnshire, containing 1,090 distinct rooted plants, 1,032 natural grasses, 58 creeping rooted clover, and other plants; and, lastly, twenty distinct species; while the same extent of surface of artificial pasture formed of rye-grass and white clover, two years old, and considered good of the kind, contained only 470 distinct rooted plants, 452 natural grasses, 18 creeping rooted clover, and two distinct species; and, further, that one bushel of the most approved seeds mixed in the best recommended

proportions afforded only two seeds to every square inch, whereas the most productive ancient natural pasture, when examined has seven distinct plants to every square inch. Rye-grass, so highly prized by British farmers, appears to have been cultivated previous to the year 1677, being upwards of a century and a half ago; and although it is deficient in almost all the qualities of a good pasture grass, and although Nature, when left to herself testifies most unequivocally to the fact that a luxuriant sward can only be obtained by a proper combination of different species of grasses of different nutritive powers, yet her suggestions are unheeded, and each succeeding race of farmers continues to adhere to the practice of a bygone age, to their own individual loss and that of the community. Rye-grass, therefore, is by no means entitled to the exclusive place it holds as an alternate husbandry grass, its chief merits being, that it produces an abundance of seed, which is easily collected, and readily vegetates on most kinds of soil, while on the other hand it is deficient, from the inconsiderable aftermath which it leaves, from its impoverishing the soil in a very high degree, if the culms, which are invariably left untouched by cattle, are not eat before the ripening of the seed, from its nutritive powers being inferior to those of many other grasses; for example, to cock's-foot in the proportion of nearly five to eighteen, to meadow fescue in that of five to seventeen &c., and, lastly, from all the varieties of it hitherto discovered, being short-lived, one plant seldom continuing in possession of the soil more than six years. In addition to these circumstances we would observe that it has been proved by actual experiment, that few grasses require more than three years to bring them to that degree of perfection which they never exceed, if properly treated during that period; this fact has been the result of attentive observation made on numerous varieties cultivated singly and also combined with others in their natural places of growth. It may therefore, with some reason be doubted, whether the prevalent opinion generally entertained, more especially by the English agriculturalist, is founded upon strict observation and experience, that if old turf is broke up and cultivated for a few years, that it cannot be again laid down with the same advantage, or rather that 15 or 20 years must elapse before it is restored to its original value. Now besides the fact already stated, that three years is found sufficient to mature almost every sort of grass, we have the additional fact founded upon the result of actual experience, that the growth and general character of every vegetable is promoted by a judicious change of soil and situation, provided every circumstance relating to the growth of this plant is equally favourable, and also that the productiveness of every kind of soil is enhanced by a proper change of cropping. In our former communications we frequently referred to the beneficial effects resulting from these changes, and in reference to these old turf lands, we are decidedly of opinion that it is more owing to a want of knowledge of the different varieties of seed requisite for laying land down in permanent pasture, than to any inherent quality belonging to the age of the turf. In these remarks we would not be understood as referring generally to every description of soil and situation, for we are aware that there are many exceptions to the successful cultivation of many of these old grass lands, and which is too well understood, particularly in England, to require any comment from us; but when we reflect upon the great extent of land which has for centuries remained under grass, and the small return which many of them yield, we feel no hesitation in affirming that the an-

nual agricultural produce of the country would be immensely increased by subjecting them to a judicious system of cultivation, inasmuch as those lands, which have from time immemorial been operated upon by the plough, would in their turn be sown down with permanent grass seeds. Then instead of having so large a proportion of land excluded from entering into the alternate system of husbandry, which is now ascertained to be the most profitable mode of cultivation, these old natural pastures would be subjected to the plough, and thus a wider field would be open to the agricultural community, and a greater extension given to capital and enterprise. This mode of procedure would unquestionably enable the English agriculturist more effectually to pursue that system of cropping, which experience has proved to be the most conducive for preparing and fertilizing the soil, and thereby rendering it not only more productive, but also more suitable for maintaining and promoting the general health of every vegetable.

This view of the matter if judiciously acted upon might lead to important results, for as Mr. Sinclair observes, the age of pasture is not essentially necessary to its excellence, but that nature rather requires a certain lapse of time to recover from a treatment in which the known and observed laws of nature are grossly neglected. These are the conclusions which Mr. Sinclair's general investigations would lead us to draw. But a matter of so much importance was not left to any *a priori* deductions, but in the course of time became the subject of direct experiment, and the result was, a distinct corroboration of them all. Mr. Sinclair states, that a portion of rich old pasture land was broken up and cropped for five alternate seasons, with oats, potatoes, wheat, carrots, and wheat again. A portion of the soil had been previously analyzed, and after the fifth year, an equal proportion was subjected to the same process, and the only discoverable difference was a small diminution of decomposing vegetable and animal ingredients in the latter case. Manure was therefore applied after the last crop of wheat, and the whole sown down in August with a mixture of eighteen grasses of the same species as those which grew in the old pasture, and as nearly as possible in the same proportion. In the first week of July following, the whole was cut and weighed, and was found to amount to one-eighth more than the produce of the ground in its original state. In the following year the respective crops were again tested, and the newly laid down grasses exceeded the old exactly in the proportion of nine to eight, and the superiority continued during successive years. It must therefore appear clear and evident, that if we plant ten, fifteen, or twenty different species of the proper grasses and clovers in one field, and in another of the same nature sow the seeds of only one or two species, that it would be unreasonable to expect the same result under such unequal circumstances; indeed, all that has been brought forward goes to prove, that when such lands are converted into tillage, they may, by the means now recommended, be again laid down permanently, and the pasture prove in a few years as valuable, if not more so, than what it was previously. We are, however, fully aware that this view of the matter will not be in accordance with the feelings of many agriculturists who have not been accustomed to break up their old turf; neither can it be expected that those who have done so, and found the difficulty of again laying it down so as to prove equal to the old, will readily accede to a change of system. But we would have those individuals who would condemn the

practice, to consider whether or not their want of success has not proceeded from the limited knowledge which they possess, not only with respect to the nature of their soil, but also with regard to the different grasses most suitable for it. It is well-known that every vegetable is improved by culture, provided this is done in accordance with the established laws of nature, and it will be found that those individuals who have attempted to follow Mr. Sinclair's instructions, and have been unsuccessful, must have proceeded without a due knowledge of the necessary proportions, and the most suitable sorts of grasses. If we admit that few are enabled to obtain a sward equal to the old turf, still we insist this is not owing to any want of vigour in the plants themselves, but must be rather to the want of a judicious selection, for should we find in the course of time the coarse grasses begin to predominate (which we believe is generally complained of amongst agriculturists) it clearly shows that either the other sorts were not congenial to the soil, or that too great a proportion of the coarser had been substituted for finer varieties.

We may therefore very naturally infer, that the want of success which has hitherto attended the efforts of agriculturists in laying down land to permanent pasture, has proceeded more from inexperience and a want of knowledge of the different qualities of the various grasses, together with their habits of growth, and their adaptation to particular soils and situations, than to any other cause whatsoever; for nature has made ample provision in providing us with varieties of every vegetable suitable for every soil and situation, and all that we require is a knowledge of their habits and tendencies, so as to enable us to place them in those situations most congenial to their growth.

This and many other important improvements must, however, be preceded by a more general and practical knowledge of their utility being diffused amongst agriculturists, but we may in a subsequent communication advert more particularly to this circumstance.

In the mean time we would just refer to Mr. Sinclair's exertions and experience, as shewing what may be accomplished by individual enterprise and research, and ask every unprejudiced mind whether, if the same principles and mode of investigation were pursued by qualified individuals with a proper field for instituting experiments, and under the direction and support of a National Establishment, whether the results would not prove of the greatest importance to the agricultural community.

A SCOTCH FARMER.

PLOUGHS AND PLOUGHING MATCHES.

It is somewhat strange that, amidst all the improvements which have been made in machines in all civilized countries, the plough should have remained almost in the same rude state until within the last fifty years; but that it should have been brought to perfection in Great Britain is not so much to be marvelled at, since the love of agriculture, and the spirit to improve it, are nowhere else so conspicuous. This delay in improvement may in some measure be accounted for by the difficulty practical agriculturalists have experienced in explaining the principle by which the plough performs

its work. No doubt the plough is a machine of an ingenious contrivance, acting on truly mechanical principles; that the circumstances upon which its goodness depends are both many and difficult to be discovered; that great ingenuity and much experience are necessary to determine that which will enable it to perform its work in the best manner and with the least labour possible. On the other hand, it has been found to be a task, although a difficult one, not exceeding the powers of the human understanding; and ploughs are now made to perform their work in such a manner, as to satisfy agriculturists that no further improvements are wanting. And yet how simple does the action of the plough appear to be after all! Only three things are to be performed; a slice of earth is to be cut off from the general mass; this slice is to be removed some inches to one side; it is so turned that it may expose a new surface to the air, and what was formerly uppermost may now be undermost or buried. To the performance then, of these things the construction of the plough must be adapted, and the work must be done with as little labour to the ploughman as possible. He must have it in his power to vary at pleasure, the depth, width, and position of the furrow. The first of these actions is performed by the coulter, the second and third by the sock and mouldboard jointly, and it is by the position of these parts together with the form of the beam which governs the draught, that a good or bad plough is produced. To Scotland we are indebted for the plough in its present improved state. Nothing has so much contributed to setting forth the properties and working of the improved ploughs as the various ploughing matches that have taken place in districts in which agriculture is carried on with a spirit which does it honour. An ill-trimmed plough has no chance here, and were our forefathers to rise from their graves and see an English acre of rough leg-bent ploughed with great care in three hours and twenty minutes, by two light horses (the travel or progress of the team being within three miles an hour), they would not believe their eyes. Then, again, the same plough (Finlayson's) in a field belonging to Mrs. Hornfray, of Coworth House, near Sunning Hill, Berkshire, turned up three acres and ten poles with one pair of horses, which were only in the field nine hours, one of the ten being allowed for dinner. In the same neighbourhood, in a stubble field belonging to George Simson, Esq., of Sillwood Park, an acre was completed in three hours and forty minutes, with the same horses on the same day. This shows what can be done, and of what vast importance is the saving of time and expenses in all large occupations of land, especially at certain seasons, in our variable climate, where so much depends on seasons. We can state from our own knowledge (for an enterprising young farmer made a journey to satisfy himself of the fact), that twelve horses, making six teams, ploughed, severally, two acres of land per day on all pressing occasions, on the farms of a large Yorkshire landholder, being at the rate of two acres per day to each plough. The horses were of the Cleveland Bay breed, and very highly fed, equally so with road coach-horses. We may fairly conclude, that to the effect produced by ploughing matches, by showing what can be done, is greatly attributable this prodigious acceleration of work; and why the use of the Scotch plough with two horses is not become general in the south, is a question which we should like to see answered. The term ploughman is occasionally made a term of reproach. To be a skilful ploughman, however, requires talent, and that of no ordinary quality. Unassisted by the square, the line, and plummet, which other handicraftsmen are furnished with, he is expected to work with the most minute exactness, having nothing to depend on but the preciseness of his vision; and in the trimming of his plough he is compelled to have recourse to strictly mathematical principles. Cicero says, nothing is more beautiful than a well-cultivated field; and to see a well-grown young Englishman walking between the stilts of his plough with a free step and an erect body, with both horses and plough quite under his command, is a gratifying sight to a reflecting mind.—*Oracle of Rural Life.*

ON THE SELECTION OF MALE ANIMALS IN THE BREEDING OF CATTLE AND SHEEP.

BY THE RIGHT HON. EARL SPENCER.

More from wishing to set an example to others, than from any hope that what I myself can suggest will be practically useful, I submit to the English Agricultural Society the results of my experience in an important part of that division of farming, to which my own attention has been particularly applied,—I mean the breeding of stock. The part to which the following observations apply is the selection of male animals. A large proportion of farmers breed sheep and several breed cattle; to all who breed either this subject is one of great importance.

The object of a certain number is to breed bulls or rams for the purpose of selling or letting them, but that of the majority is to breed oxen or wethers for the purpose of grazing. The first of these classes is very well aware of the importance of selecting good male animals, and profess to spare no trouble and to be very indifferent as to the expense which they incur in obtaining them; but with respect to those whose object it is only to breed oxen or wethers, I am afraid the case is generally very different, and they take very little trouble and expend as little money as possible in procuring the male animals to which they put their females; that is, they consider as a matter of indifference that on which the profitable or unprofitable nature of their occupation mainly depends.

It is admitted by every one that the bodily and constitutional qualities of the offspring are usually similar to those of the parents, either combining in various proportions the qualities of both parents, or taking entirely after one. I should say, as respects cattle and sheep, that, in most cases, the qualities of the male parent predominate in the offspring. I have also observed that the worse-bred the female is, the more will this be the case when she is put to a well-bred male. This observation was first made, I believe, by the late Mr. Berry, in an essay, for which he received a prize from the Highland Society. He accounted for it thus: a well-bred animal means one whose ancestors for several successive generations have all been good, that is, have all possessed the peculiarities in constitution and shape which it is the object of experienced graziers to obtain in their stock. The characteristic, therefore, of the family of such an animal will be such peculiarities; but the ancestors of a badly-bred animal will probably have varied in every possible way, and therefore there will be no distinguishing characteristic in its family; it is consequently most probable that the offspring produced from a cross between two animals so circumstanced will be more like the one in whose family there is a distinguishing characteristic, than the one in whose family no such characteristic exists. The common but, I believe, mistaken notion, that the offspring from the first cross is better than that from any subsequent one, probably arises from the improvement in the first instance being so much more apparent than, for the reason given above, it is likely to be in any one generation afterwards. Now it is known to all graziers that the attempt to fatten an animal, who possesses no feeding propensities, produces loss instead of profit. If the above observations are correct, the feeding propensities descend from the sire; it is quite just, therefore, to say that a breeder of cattle or sheep, who considers it a matter of indifference what sort of male animal he uses, does consider it a matter of indifference whether he gains profit or incurs loss.

The first object which any breeder of cattle or sheep must keep in view, whether he intends to breed bulls or rams, or whether his aim is merely to breed oxen or wethers, is that the stock which he breeds shall be healthy. The first thing, therefore, to be considered in the selection of a male animal are the indications by which it may be possible to form a judgment as to his constitution. In all animals a wide chest indicates strength of constitution, and there can be no doubt that this is the point of shape to which it is most material for

any breeder to look in the selection either of a bull or a ram. In order to ascertain that the chest of these animals is wide, it is not sufficient to observe that they have wide bosoms, but the width which is perceived by looking at them in the front should be continued along the brisket, which ought to shew great fulness in the part which is just under the elbows; it is also necessary that they should be what is called thick through the heart. Another indication of a good constitution is, that a male animal should have a masculine appearance; with this view a certain degree of coarseness is by no means objectionable, but this coarseness should not be such as would be likely to show itself in a castrated animal, because it thus might happen that the oxen or wethers produced from such a sire would be coarse also, which in them would be a fault. Another point to be attended to, not merely as an indication of a good constitution, but as a merit in itself, is that an animal should exhibit great muscular power, or rather that his muscles should be large. This is an usual accompaniment of strength of constitution, but it also shows that there will be a good proportionate mixture of lean and fat in the meat produced from the animal; the muscles being that part which in meat is lean. A thick neck is in both bulls and rams a proof of the muscles being large, and there can hardly be a greater fault in the shape of a male animal, of either sort, than his having a thin neck. I am inclined to say, that in the new Leicester breed of sheep, which is the breed to which I am accustomed, a ram's neck cannot be too thick. Other indications of muscle are more difficult to observe in sheep than in cattle. In a bull there ought to be a full muscle on each side of the back-bone, just behind the top of the shoulder-blades; he ought also to have the muscles on the outside of the thigh full, and extending down nearly to the hough. It will seldom happen that a bull having these indications will be found deficient in muscle. With respect to rams, my own observation does not enable me to point out any other indications of muscle except the thickness of the neck, which I have mentioned above; if other farmers are able to point out any, I would only say there is scarcely any thing to which they ought to pay greater attention.

As I am writing for the use of farmers, it is quite unnecessary for me to attempt to give a description of what is considered a well-shaped bull or ram; it is also obviously impossible to express in words what is meant by good handling. It is sufficient to say, therefore, that no male animal is fit to be used at all as a sire whose handling is not good, and that the more perfect his shape is the better. The above observations apply to breeding generally; for whatever may be the sort or size of the animal intended to be produced, there is no doubt but that good health, propensity to fatten, and good shape, in all cases, ought to be aimed at. But there are not only different breeds, both of cattle and sheep, but experienced and very good farmers differ very much in opinion as to which peculiarities of shape and size are to be preferred, even among animals of the same breed. It is therefore very desirable, before any man commences to breed either cattle or sheep, that he should make up his mind as to the shape and qualities he wishes to obtain, and steadily pursue this object; if he does so, there is very little doubt but that he will succeed in having a herd of cattle or a flock of sheep possessing the characteristics which he at first intended they should possess; but if, on the other hand, he breeds at one time with the view of obtaining animals possessing one sort of shape, and at another time with the view of obtaining animals possessing a different sort of shape, the probability is, that his stock will possess neither the one nor the other in any degree of perfection. Having made this decision, he should take care that the individual male animal which he uses shall possess the qualities which he requires. In addition to this, it is of great importance that these qualities should have been characteristic of the family from which the animal is descended; and if he is old enough to have been the sire of any number of offspring, it is of a great deal more importance still that they should possess them. Because all the perfections of shape and quality

which the best judge may wish to find in a male animal are, after all, only indications of what the stock got by him will probably be; the seeing, therefore, what they really are is much more satisfactory.

There are few breeders, of cattle more especially, who breed upon so large a scale as to enable them to keep many male animals at the same time in use. A man, therefore, can usually only look at the general qualities of the females which he possesses, and observe what are the faults most prevalent among them: these he should be particularly careful to avoid in the male which he intends to use. It is sometimes said that a male animal ought to have no faults, and undoubtedly it would be very desirable that this should be the case; but, unfortunately, no such animal exists. All a man can do, therefore, is, to avoid putting a male and female together whose imperfections are the same, so as not to increase the fault already existing in his stock. If a man breeds upon a large scale, and uses several males at the same time, he can, of course, attend to this more effectually than if he uses only one. In this case, he should select and put together the males and females individually, so as to endeavour to correct any imperfections which either of them shew. Most breeders of sheep, indeed, do use more than one ram, and all who pretend to take any pains in improving their flock divide their ewes, so as to put them with the ram who will most probably effect this object. I need not say that those (some of whom, I am sorry to say, still exist) who turn two or three rams of different shapes and qualities into a field with all their ewes, without attempting to make any selection among them, have no right to expect to be successful breeders; and if they do expect it, will certainly be disappointed. I believe the general opinion of breeders is, that it is disadvantageous to endeavour to correct any fault in the shape of a female by putting a male to her who possesses, in extraordinary perfection, the merit in which she is deficient, but who in some other part of his shape is faulty. My experience leads me to say that this mode of endeavouring to correct a fault is frequently successful. It would be better that none of the females from which a man intends to breed should be faulty in shape to any considerable degree, but it almost always will happen that some animals, possessing an excellent constitution, good blood, and a great propensity to fatten, and therefore such as the owner would very unwillingly cull, will fail decidedly in some part of their shape. I would say that, when this is the case, it is worth while to try the experiment of putting to them a male remarkable for his perfection in this failing part; and, in my opinion, such a male will be more likely to correct the fault, than one who shows no one part of his shape very superior to the rest. The late Mr. Cline, whose eminence as a surgeon is very well known, published a tract upon the breeding of domestic animals, which contained, as might be expected, most valuable information. His suggestions are such as ought to be very carefully attended to; but it is probable that his meaning has been mistaken in one recommendation which he gives, namely, that in which he is understood to say that it is always desirable that the male should be smaller than the female. When he makes this observation he is speaking of the crossing of different breeds, and probably only means that in a cross between a large breed and a small one, the male should be taken from the small breed, and the female from the large one. It is hardly possible that he intended to say that in the same breed the male ought to be smaller than the female, because this is contrary to the practice of nature. In every description of land animal with which I am acquainted the males are of a larger size than the females. The attempt also to follow this advice would undoubtedly, in a few generations, so very much reduce the size both of males and females, as considerably to diminish their value. I can say, from my own experience, that some of the best-shaped animals which I have bred have been produced by following a contrary course. I prefer breeding from large females; but if I do breed from one which I think too small, I put to her the largest male of good shape that I possess. As one instance among several to prove that

this course may be successful, the ox which I showed in the fourth class, at the last Smithfield show, and which obtained the prize in that class, was by the largest bull I have, from a cow so small, that I culled her after she had bred that one calf. It must be admitted that the theoretical reasoning which Mr. Cline adduces in support of this recommendation appears to be very conclusive; but, even in the restricted sense in which I understand it, there is some doubt whether it is practically correct. The most successful cross between two different breeds of cattle, of which I am aware, was the one between a Durham bull and a Galloway Scotch cow, made by Mr. Charles Colling. The produce from this cross sold for enormous prices at his sale, and at the present day a majority of the best short-horned cattle are descended from it. My opinion, then, the result of my own practical experience, is, that if a man considers the female animals which he possesses to be smaller than he wishes, he may safely put them to a male of large size, provided he is well bred, of good quality, and is well-shaped. But I am bound to add, that I know, in giving this opinion, I differ from the most skilful and successful breeders with whom I am acquainted.

It follows from the above observations, if they are correct, that the first and most indispensable object which all breeders must try to obtain, whatever may be the sort of animals they wish to have, whatever may be the shape or size they prefer, is that the male animal which they select shall possess a strong and healthy constitution. This is absolutely essential; but it is also most conducive to their success that they shall, after due consideration, make up their minds as to the qualities which they wish their stock to possess; that, having made this decision, they shall steadily pursue the object they have in view, and endeavour to select such males as shall be likely to get offspring possessing these qualities; that they shall carefully and candidly examine the females from which they intend to breed, observe the faults in shape or quality which prevail among them, and select males who shall possess corresponding perfections. That the safest mode of ascertaining what are likely to be the qualities of the produce from a male in future is, where there is the opportunity, to see what are the qualities of the offspring already produced from them; then, the next to this is, to observe what are the qualities of the family to which he belongs; and that in the case of not having the opportunity of making use of either of these guides, they may assume that it is probable that the qualities of the individual himself, which in all cases ought to be attended to, will, if he is well bred, descend to his offspring.

It has already been said that there are two classes among the farmers who breed cattle and sheep; the one, of those who breed bulls or rams, and the other, of those who breed oxen or wethers for the purpose of grazing only: the above observations are intended to apply to both. But much more attention ought to be paid by the first of these classes to the selection of the animals from which they breed than is absolutely necessary in the other. This is essential to their own interest, because a male animal very often shows faults in his shape which if he had been castrated, would not have appeared. It frequently, therefore, happens that the produce from a bull or a ram may prove excellent cattle or sheep for grazing purposes only, but may be totally unfit to be kept as the sires of future stock. Their duty also to those who hire or buy from them imposes upon them the obligation to pay the strictest and most minute attention to the qualities of their male animals; more particularly, they are bound not to offer to their customers any one, of the health of which they have any reason whatever to doubt, whether this doubt arises from any weakness of constitution, which may have appeared in the individual himself, or whether it arises from their knowledge of the family from which he is descended. They are bound also, not to keep as males any animals who are not perfectly well-bred. It does

not follow from this, that a long pedigree is in all cases necessary, although it is generally desirable; but it sometimes happens that a female, of whose pedigree the owner is ignorant, will have produced offspring which have all possessed extraordinary merit, and which have proved themselves good breeders also: a male descended from such a female may be considered perfectly well-bred on her side; and will, very possibly, prove a better sire than many whose pedigree on paper is much longer.

In paying this minute attention to their occupation, the breeders of male animals have some advantages not possessed by others: they have generally the opportunity of knowing accurately what are the characteristics of the families of the animals from which they breed, an opportunity not possessed by those who breed only for grazing purposes. In order to make a proper use of this advantage, they ought to keep accurate pedigrees of their cattle and of their sheep, and as far as possible, when they put the males and females together, recollect what have been the respective qualities of the ancestors of each. They have also the opportunity, by using a male cautiously at an early age, of knowing by experiment, whether the stock produced from him is good or bad, before they run the risk of injuring their stock materially by using him largely. This may be ascertained with sufficient accuracy when the produce are very young; for an experienced breeder can judge with tolerable certainty what will be the shape of a calf or a lamb when it grows up by seeing it soon after it is born, and before it has begun to lay on fat. Nor is it necessary to see many of the produce for the purpose of deciding what its general characteristics will probably be. I admit that in saying this I am speaking more from my experience as a breeder of cattle than a breeder of sheep, but I believe the same observations will apply to both. It is certain, however, that seeing four or five calves from a bull ought to be a sufficient guide to the breeder as to whether he will be valuable as a sire or not. Unless there is a family likeness which generally pervades through the produce from a bull, although he may be valuable as the sire of oxen, it will not be safe to use him as the sire of bulls. The seeing, therefore, four or five calves will prove to the breeder whether there is such a family likeness among them, and whether it exhibits itself in such qualities as indicate that when they grow up they will be valuable animals.

There is one failing to which all breeders are liable, but to which the breeder of male animals, from the greater interest attached to his occupation, is more peculiarly liable, and against which he ought most carefully to guard himself; this is, too great a partiality for animals bred by himself. In order to guard against this he ought to occupy himself more in looking for faults than in discovering merits in his stock, he ought to listen to every criticism he hears made upon them, even by those whose judgment he does not hold in high estimation—not, of course, with the view of being satisfied at once that the criticism is correct, but with the view of satisfying himself, by accurate and candid examination, whether it is so or not; and he ought frequently to see the stock belonging to other breeders, and fairly compare its merits with those of his own.

I think it most probable that in the foregoing observations nothing will be found which will give new and useful information to practical farmers; but I have been induced to submit them to the English Agricultural Society, because I conceive that one of the great objects of that society is the diffusion of knowledge connected with every branch of farming. The best way in which it can be enabled to effect this object, is by those of its members who have paid attention to any of the divisions of farming operations communicating to the Society the results of their practice and experience. It will then be for the Society to circulate, by any means in their power, such of these communications as it shall appear to them are likely to be useful to those engaged in the cultivation of the land. With this view I place this paper at their disposal.

THE CORN LAWS.

QUESTIONS PUT BY THE ANTI-CORN LAW DELEGATION, ANSWERED.

1. In your opinion, are restricted duties upon the importation of foreign agricultural produce necessary to the protection and instrumental to the prosperity of the British agriculturist, and how?

Yes; by encouraging the growth of great quantities of corn at home, so as to ensure it at a regular and moderate price at all times, and by employing home labour instead of foreign.

2. Have the existing laws restricting the importation of foreign agricultural produce benefitted the British agriculturist? If so, in what respect?

Yes, generally by a more regular and average remunerating price. If the ports were open, great quantities of foreign corn would be grown for the British market, when a glut would ensue and drive our own soil out of cultivation, then the first year of scarcity that came, foreigners would prohibit it, and our own capitalists by buying it up would make corn an absolute famine price.

3. At what expense can wheat, barley, and other agricultural produce, be raised in your district and brought to market, exclusively of rent?

Without rent, wheat forty-six, barley twenty-seven, oats eighteen shillings per quarter; with rent, wheat from fifty-five to sixty-five, barley thirty to forty, oats twenty to thirty shillings per qr., and other corn in proportion, according to productive or scarce seasons, and good or bad harvests.

4. What prices do you require for these articles in order to furnish you with what you consider a fair rate of profit on your capital, after disbursing rent, labourers' wages, and other necessary expenses?

This question answered in the above.

5. If it be proved that wheat of a quality equal to English cannot be procured in foreign ports at less than an average of thirty-five shillings per qr., the additional charges up to the time of delivering at the port of discharge in this country being ten shillings per qr., do you think with your own knowledge of the expense at which you can bring your produce to market, that there is any reason to apprehend such competition from foreign agriculturists as would prevent your obtaining an adequate remunerative price and fair rate of profits?

The lowest prices must be submitted to, and great loss ensues, for it can be proved that wheat of a quality equal to make exceeding good English bread can be imported from the principal northern ports of Europe, at an average considerably under thirty shillings (see tables or return of prices from such ports), and sent to the principal English markets for as little money as the inland counties can send theirs to London, Manchester, &c.

6. Would not a fair and natural level of prices be more beneficial to the farmers than prices subject to frequent and great fluctuations, and better adjust rent, wages of labour, and other outgoings of the farmer?

Steady and regular prices are beneficial to farmers when they proceed from average crops. A natural level of price is a high price in scarce years and a low price in plentiful ones, and, therefore, at such times, greatly operates in favour of the consumer. Corn would have been much higher at this time but for the free importation of foreign corn. There will be less variation in rent and wages when the price is steady. Uniform demand and produce, equal in quantity and quality, are the only true basis of a steady price.

7. Has the operation of the restrictive system of corn laws been to keep prices steady?

Yes, and we cannot conceive of any system being better adapted to produce this effect than the present graduating scale, and to demonstrate this, we refer back to the last ten years; and that the present high price is the natural consequence of a deficient crop, not only in this country but throughout Europe, is sufficiently proved by the ports having been open for the last six weeks at a nominal duty.

8. On a balance of years and prices, do not profits al-

most invariably fall as prices rise, and rise as prices fall? State facts.

It is the relative proportion of produce and price which makes the difference of profit or loss.

9. What extent of tillage, in consequence of the operation of the corn laws, as within your personal knowledge, has caused loss to the landlord or farmer?

We apprehend the present corn laws has caused great extent of tillage, by giving confidence to the landlord and farmer, and been beneficial to both.

10. What tracts of inferior land have passed out of tillage during the low prices under the existing corn laws?

We know of none, prices having been extremely low for only a short time. Very extensive tracts of land have been brought into tillage by confidence being placed in the present corn laws.

11. Can you give any example of the extra sum received for corn in consequence of the high prices of the present season; and per contra the extra sums paid for seed-corn, keep of horses and cattle, extra wages, poor-rates, tithes, or other outlay?

It is only in a few cases that an extra sum has been received for the wheat crop this year, the deficiency of the yield generally having been greater in proportion than the enhancement of price, and in many instances farmers have been heavy losers by their wheat crops. Wages are increased from 12s. to 13s. 6d. and 15s. per week. The cost for seed of horse corn, &c., is of course higher in proportion to the advance in corn.

12. Have you had an opportunity of observing the effect produced upon Scotch husbandry by the Scotch farmers being forced to sell their grain at the same price with English farmers, who enjoy a more genial soil and climate?

This question assumes that which is not the fact. The Scotch farmers in their best cultivated districts have as genial a climate and a more fertile soil, and in the less favoured parts have advantages which the English farmer has not, which place him in a position to compete upon equal if not more advantageous terms: viz.—they hold under leases, they pay twenty-five per cent. less wages, and chiefly in kind, no tithes, no poor-rate, or but a trifling one, have fuel cheaper, and by the introduction of steam power and contiguity to water communication can convey their produce to Liverpool and London, the best English markets, at less expense than many corn growers in the midland counties of England can; they have, moreover, had the same protection from foreign competition as the English farmer.

13. Has not the effect of this competition been that in Scotland, husbandry, as a skilled profession is more advanced than in England? State facts.

We believe that husbandry, as a skilled profession, is better understood generally in Scotland than in England (although not in all parts), but deny that it has arisen from any severer competition to which they have been exposed, but to leases—to the absence of tithe and poor-rate—to a more general diffusion of education—and to the greater nationality and interest taken by Scotch proprietors in the improvement of their estates. With respect to the breeding and management of sheep, and the application of bones and tile underdraining, we deny their superiority; bones and drain tiles were extensively applied in Lincolnshire long before they were much used in Scotland.

14. Is there not reason to expect that the same beneficial effect would be produced upon English husbandry, if the English were brought into competition with the foreign cultivator?

This question is also based upon false premises. Place the British cultivator upon the same footing as the foreign one, and he will not fear competition; but to do this it is presumed that it will first be necessary to pay off the national debt—to dispense with poor rates, and very greatly reduce rent, tithes, and other public burdens; it would also require a reduction of wages to the amount of seventy-five per cent., and this would involve an immense reduction in manufactured articles.

15. What has been the effect of applying the system of free trade to the wool production of this country? Has the admission of foreign wool diminished English

growth? Any facts showing the extension of this branch of agricultural industry.

It has been beneficial especially to the manufacturers, but wool is an article the value of which labour forms a very small part, and its importation, instead of coming into competition with, and supplanting English labour, as the free importation of foreign corn would do, has provided employment for our manufacturers; the steady and increasing demand of the home market under the existing corn laws, and our natural facilities for manufacturing and improvements in machinery, have greatly contributed to ensure the prosperity of our manufactures, which have increased and flourished in an unexampled degree.

16. Have you remarked the advantages derived by the farmer from the proximity of his land to great commercial and manufacturing towns—first, from the greater facilities of obtaining manure and other artificial aids to production; secondly, from the wider and more opulent markets opened to him? If so, specify examples.

The proximity of land to large towns renders it of more value to the proprietor only, the occupier having to pay a larger rent in proportion to the advantages, competition for it being greater; but from the nature of things this can be enjoyed, even under the most flourishing state of manufactures possible, by comparatively few, but the measure of advantage belonging to such property over land more remote from markets has been greatly diminished by the improvement in roads, canals, &c., and by the introduction of bones and other manure of small bulk and great power, and is in progress of being further reduced by the introduction of railroads.

17. Can you communicate any facts showing the tendency of improved communication—viz., by steam navigation, canals, railroads, &c., to benefit the agricultural interest?

We apprehend it is mainly from machinery, pulverised manures, improvements in navigation, rail and other roads, &c., that wheat can now be as easily afforded at fifty-five to sixty-five shillings per qr., as it could formerly from seventy to eighty.

18. What proportion of the agricultural produce of your district is shipped coastwise for market, quantities of each description of grain, and markets to which sent?

We have no means of ascertaining the quantities, but we suppose the county of Lincoln, by coastwise and inland navigation, exports three-fourths of its produce, principally to London, Manchester, Wakefield, Leeds, &c., and imports nearly the whole of its consumption in manufactures.

19. Will you state any facts showing how the depression of trade and manufactures operate to the prejudice of the agricultural community?

By the importation of foreign labour in the shape of corn, silk, and other manufactured articles, the agriculturists are distressed, the great home market is overstocked, and consequently all trades and manufactures in the kingdom are distressed.

20. Are there not many ways in which the import of foreign corn would give an increased demand for the employment of agricultural labour, directed to the extension of other products of the soil? State particulars.

Not any, on the contrary it would deprive multitudes of agricultural labourers of employment, and as the soil and climate of many foreign countries are equally if not better adapted to the growth of other articles as well as corn, such as hemp, flax, rapeseed, &c., there is no prospect of their finding employment by raising them, especially as their growth in England was for a time nearly annihilated by the repeal of the restrictive duties on the foreign article, which took place some years back.

21. Have the existing corn laws, while they kept up the price of bread, kept up proportionally the wages of agricultural labour? Give examples.

The present high price of bread is owing to a deficiency in the late harvest. When corn was low, wages were from 8s. to 10s. per week, with great difficulty to get work, when corn rises wages also advance; they are now from 13s. 6d. to 18s. per week, with full employment for himself and family likewise, therefore have risen from thirty to forty per cent. or more.

22. To what extent would the free importation of

articles of food benefit the agriculturist, by diminishing the cost of all other articles?

The free importation of corn, annihilating as it would the profits of the farmer, that is without a correspondent reduction in all the outgoings, would produce no benefit to him by reducing the value of articles, which he would have no means of purchasing.

23. To what extent would it benefit the agricultural labourer?

It would entirely ruin him, by reducing his wages full fifty per cent., while his manufactured and taxable articles of consumption would be nearly at the same price.

24. Is not the condition of the agricultural labourer in manufacturing districts superior to his condition in districts only agricultural? State facts.

By no means; their wages are some little higher, but the rent and cost of living are greater in proportion, and their morals far worse, from a closer contact with the vices of large manufacturing communities; and their families also acquire an extravagant taste for dress, which decreases their comforts.

25. Would not a free trade in corn, equalizing the prices of corn in the British and Continental markets, necessarily give to the British consumer the benefit of importation when there was a deficient crop, and to the producer the benefit of exportation when there was a redundant crop?

The present corn laws give the consumer the full benefit of importation in a scarce year, and in a redundant one it could not be exported from comparatively a rich country to a poor one.

26. In your district are any of the agricultural labourers or their families engaged also in manufacturing processes, weaving or the like? Give particulars.

None.

27. Does such employment enable them to pay any larger rents, or to pay their rents more readily?

None so employed.

28. Have you noticed any falling off in the employment of these individuals in manufactures of late years—has this been attended with loss to their landlords as well as themselves?

None so employed.

29. Of no importance.

30. Have any, and what, improvements in agricultural machinery (the result of the improvement of our manufacturing machinery) been introduced in your vicinity?

Great improvements have taken place certainly in agricultural machinery of late years, but none of them, as far as our knowledge goes, has been the result of improvements in manufacturing machinery.

31. What is the average produce of wheat per statute acre in your district, and has there been any increase or decrease of late, and to what extent?

We take the average produce of wheat in this district, in good years, to be three quarters per acre, and to be on the increase, in consequence of confidence in the present corn laws.

32. Has there been any emigration of the agricultural population of your locality either to foreign countries or to manufacturing districts, and of what class of agriculturists? State particulars.

A few years ago, when corn bore a low price and labour difficult to be obtained, a great number of small farmers and labourers were obliged to leave the country, but since the improvement in the price of corn, owing to the present corn laws, the condition of the labouring classes has greatly improved, and no emigration is now taking place.

33. Is it not a fact that large tracts of land are in a state of deplorable backward cultivation in consequence of the direct or indirect action of the corn laws? State examples.

The country is in a state of rapid progressive improvement, caused by confidence in the present corn laws?

In addition to your answers to these questions, it is in your power materially to assist us by pointing out and securing the services of any gentleman of sound knowledge on agricultural matters, and agriculturists who may be able and willing to give evidence on the points above enumerated at the bar of Parliament or elsewhere.

These questions are answered by the undersigned practical farmers:—

	No. of Acres.	Years in Business.
T. Greetham, Stainfield, farmer and landagent	890	20
T. Clarke, Glentworth, farmer and land agent	600	46
J. W. Dudding, Saxby, owner of 500, occupier of	1000	30
Richard Dudding, Panton, farmer ..	1100	20
Henry Moore, Redbourn, farmer ..	640	20
J. G. Stevenson, Skellingthorpe, farmer	700	29
William Lonstaff, Fiskerton, farmer..	650	12
Messrs. Marfleet, Boothby, farmers ..	800	30
William Lambe, Aubourn, farmer....	740	20
Charles Tonge, Branston, farmer	1000	15
Edward Gibbeson, Red Hall, farmer.	400	18
Geo. Waddington, Kettlethorpe, farmer	400	33
William Jepson, Heighington, farmer	350	16
T. Clarke, Jun., Bracebridge, farmer..	760	25
Richard Pears, Jun., Scopwick, farmer	880	20
Richard Allwood, Dunholme, farmer	500	20
Henry Paddison, Ingleby, farmer....	200	25
P. F. Pell, Jun., Tupholme, farmer ..	900	30
John Lisiter, Skellingthorpe, farmer..	500	34

THE CORN LAWS.

SIR,—Amidst the many evils consequent on the periodical discussion of the corn laws, there are also some benefits resulting from the continued watchfulness thereby imposed on the friends of agriculture, and the important facts there incidentally elicited.

I, therefore, read Mr. Ellman's letter in your paper of the 4th inst. with much interest, not only on account of the intelligence and great respectability of the author, but because it presents, as I shall presently show, a most striking confirmation of my own preconceived opinion in favour of the principle of the present corn laws; and which induces me thus respectfully to compare notes with Mr. Ellman, who states that "he laid the plan of the graduated scale of duty before Government in 1826-27." But Mr. Ellman does not say at what precise period of these two seasons this, doubtless, private hint was given to the Government. Now it so happens, that actuated by the same generous motive, and following the same train of ratiocination I had in 1825, arrived at the very same conclusion, as noticed at p. 35 of my pamphlet, or "Review of the evidence taken before the select committee of the House of Commons on agricultural distress in 1836," a copy of which I had the pleasure of presenting to you some time ago, Mr. Editor, through the hands of Mr. Cadell, the publisher.

It would therefore appear, that while Mr. Ellman might be cogitating in private, I was publishing to the world the outline of the present corn laws in the columns of the *Stirling Journal*, a file of which now lies before me, and from that of the 2d February, 1826, in particular, I beg to submit a single paragraph from a long letter of mine on the corn laws, dated 23d January, 1826, in purport as follows:—

"The most difficult part of such a corn bill remains still unnoticed—and that is, the rate or amount of duty at which foreign corn ought to be admitted, and much as has been said on the general question, no one has ever yet given us any information in this particular. Suppose then, that we should assume the following rate of duty as necessary till better should appear, viz.—that when the average price of wheat is at or under forty shillings, the duty should be thirty-two shillings and sixpence; that when the average is fifty shillings, the duty should be thirty shillings; that when the average is sixty shillings, the duty be twenty-five shillings; that when the average is seventy shillings, the duty be fifteen shillings; that when the average is eighty shillings and upwards, to be duty free; and so on at the same rate of duty at all the intermediate prices from forty to eighty shillings." J. CARMICHAEL.

Raploch Farm, near Stirling, March 18, 1839.

A FEW THOUGHTS ON AGRICULTURE.

When rain falls on the ground, part of it runs off into ditches, and thence into rivers; but the greater part is taken into the soil. Plants consume much of this retained water; some of it descends into the bowels of the earth, and some only as far as the upper layer of alluvium and rock, by which it is driven to a lower level, when it afterwards finds its way to the air in springs through the cultivated soil, and thence into rivers; but a greater proportion of it only descends as far as the subsoil, which, if not porous, retains it. That which makes its appearance in springs is generally easily led away in drains made for the purpose. Much skill and capital have been expended in this species of draining in this county. The benefits are, that few *springs* are now to be seen in cultivated land, and it is likely those benefits will be permanent.

The water which is retained between the upper soil and subsoil remains to effect incalculable mischief. While hidden water remains, manure, whether of the rotting kind or the caustic, such as lime, can give no fertility to the soil; the plough, the harrow, and even the roller, cannot pulverise it into a fine mould; the grass can contain no nourishment for live stock, as the finer sorts disappear, and their places are taken by coarse water plants; the stock can never receive a hearty meal of grass or straw from land in such a state; they are always hungry and dissatisfied, and of course remain in low condition; the trees acquire a hard bark, stiffened branches, and soon become covered with moss; the roads in the neighbourhood are constantly soft and sullied; the ditches and furrows are either plashy or like a sponge, full of water—places ready and certain to give sheep rot and red-water; the surrounding air is always damp and chilly, and from early in autumn to late in spring the raw hoar-frost meets the face like a wet cloth morning and evening. In winter the frost incrusts every furrow and plant with ice, not strong enough to bear one's weight, but just weak enough to give way to every step, while the snow lies lurking in crevices till late in spring—fit feeding ground of the woodcock and snipe; and in summer mosquitoes, green flies, midges, gnats, and gadflies torment the cattle, the labourer, and his horses from morning to night, whilst the sheep get scalded heads and eaten up by maggots, during the hot blinks of sunshine. We wish that this were an exaggerated picture! It may be seen in part, if not in whole, in every parish in Cumberland. Look into the mountainous and lake region of this county, nay, into the cultivated plains, and part of this picture will somewhere present itself to the view. Even in the choicest spots, for the richest portions are but spots in size in this favoured county, favoured by Providence in the industry, skill, and prudence of its inhabitants, draining would act as a charm in causing an economy of labour and manure, and consequently of capital; for if one ton of manure is saved, that is equal to one ton additional being made, and an additional ton of manure applied to land brings a proportionate increase of crop; also as well-drained land can be tilled with less labour, so must the expense of tillage be less, and, as a consequence, the profit upon the crop raised on such land is in the same proportion to the saving of labour and manure, and the increase of produce. Let us also view it in another light, in that of the increase of national wealth. Simple expenditure of capital does not increase national wealth, unless that expenditure is reproductive, that is, unless it returns more than is expended; therefore, a labourer who consumes ten pounds worth of provisions in the year by his exertions adds nothing to national wealth, unless by that labour he creates more food or value than he consumes in supporting himself; but as much as he creates above that amount, by just so much does he increase our national wealth, and by just so much is his expenditure productive.

As, therefore, we have seen that draining renders land easier to be tilled, so will it enable the labourer with the same degree of exertion, and in the same time, to till a larger quantity of land. By draining we have also found

that the same quantity of land will produce a greater quantity and better quality of produce. By draining, also, we find that no manure lies dead in the land; therefore, by as much as used to be wasted in undrained land, by so much do we save or increase the quantity of our manure. Therefore, add all these gains together and we shall then find how greatly draining increases produce, decreases the cost of tillage, and thus adds to the profit of the agriculturist, and to the national wealth.

After reflecting on these statements, it will be acknowledged that draining has not been prosecuted in this county even to the extent it might be, and far less to the extent that would amply repay its cost. The cost would, no doubt, be considerable, but if it were executed in a substantial manner, we maintain that the increase to the first crop, in the better description of land, would repay the whole expense to the farmer, be that what it may. But the tenant ought not, in justice, to bear the whole expense of such a fundamental improvement of the land. The landlord should, at least, bear one-third with him, and lessen the burden to each, though draining will amply repay the farmer without the landlord's assistance.

Considering how anxious landholders generally are to purchase land, it is surprising to observe how reluctant they are to lay out capital in draining. This must, we think, arise from their not having sufficiently considered the subject, for if they did weigh the matter, they would soon find that capital invested in draining returns a much better profit or greater interest, than capital laid out in the purchase of land. A man purchasing land is quite content if he receives four per cent. for his investment; but he is reluctant to lay out capital in draining, though capital so invested in the better description of land will pay one hundred per cent.; but suppose, for the sake of being very far within the mark, we only set it at eight per cent., is it not better to invest his capital in draining and receive eight per cent., than in the purchase of land which only pays four per cent? R. B.

—*Carlisle Patriot.*

ECONOMY IN LABOUR, AND IMPROVEMENT OF SYSTEM.

While every other class of the community are using all the means within their power to lessen the expense of producing the articles of their manufacture, the farmer still goes on in his old beaten track, never inquiring whether he cannot accomplish his labour with less actual, but more efficient strength of horses and men; or whether other implements are not preferable to those he has now in use.

Thus, while the expense of all other occupations has been reduced from one half to a tenth part of what they used to be, the expenses of the farmer have in many instances been increased.

Most farmers limit their expenditure to the absolute necessities required in their mode of culture, instead of laying out fresh capital in attempting to increase the productiveness of the soil. Their views have extended no farther than the next crop, a quick return being their only object, even where it would not pay the expense of production, or looking perhaps to the chapter of accidents, or waiting to see what Government will do for their relief.

This they continue to do, obtaining only a scanty crop which is dear to the buyer and unprofitable to the grower; instead of producing, by an outlay of additional capital on improved culture, a plentiful crop which would be cheap to the consumer and profitable to themselves.

But farmers in general adopt the custom of the neighbourhood in which they live, in the course

of husbandry and general management of their farms; and they follow the footsteps of their fathers in this respect more pertinaciously than any other class of society; and while improvements in all other arts and manufactures are going on at so rapid a rate, that of agriculture lags far behind.

When a farmer does not improve the land he cultivates, it is evident that something is wrong in the system he adopts; it may be owing to his ignorance of the best mode of cultivating the particular soils of which his farm consists—the want of capital, or even a determination not to lay out his capital to improve another man's land, which we have often heard expressed, and by those that are reckoned intelligent and liberal farmers, although we cannot perceive the mark either of intelligence or liberality in persons who hold such sentiments.

The sands of Norfolk and Suffolk have been so much improved by the application of clay, marl, or chalk, and the alternate system of husbandry, that a crop of turnips is now produced on some land equal in value to the previous fee simple of the same soil; while the rich clay land in the vale of the White-horse in Berks, and in the vale of Gloucester, remains without any increase of its productive powers, and is still cultivated with from three to six horses in a plough.

The Norfolk system of ploughing with two horses abreast was introduced into Roxburghshire in 1762, by Mr. Dawson of Frogdon; it soon spread over the greater part of Scotland, and has been continued as the most efficient mode of cultivating every kind of soil, from the lightest sand to the strongest and most tenacious clay.

Tull's system of drilling turnips, as well as ploughing with two horses abreast, was carried by Mr. Dawson into the northern counties of England; but to the present day, these improvements in agriculture have made very little progress in the southern counties. Two horses are very seldom to be seen at work abreast in a plough; we generally observe three or four at work in a plough even on the lightest soil in Berks and other counties, and these of a heavy description of animals, whose natural pace is seldom more than one mile an hour; so that it is with considerable exertion that these three or four horses with a man and a boy, and a most cumbersome plough, turn over three-fourths of an acre a day; while two light active horses plough, with the greatest ease, upwards of an acre every day, and even two acres in the fallow field.

The reason why improvement in agriculture proceeds at a much slower rate than improvements in many other sciences, is in fact owing to the very little intercourse there is amongst farmers themselves.

The English farmers in general are not readers, they therefore lose all the recorded improvements of individuals, or of agricultural societies. There is no system of education adopted in England, whereby the first principles of agriculture may be acquired; the only agricultural education therefore which the farmer receives is from the practice of his father, and that of the neighbourhood in which he dwells, and which has been handed down unadulterated and unimproved through many generations, and adhered to with an obstinacy which no reason can induce him to give up or change.

The prejudices of the farmer in favor of the mode of culture which he follows, and against all

those whose modes are different, although they are performed at one-half the expense, and produce as much or a greater return, and although only a few miles distant from him, are of the most pertinacious kind, and will never be got rid of, till some dire necessity compels him to open his eyes to see his own interest; nothing but this we are persuaded will ever induce many to change their present habits.

The produce of agriculture may be easily increased, even doubled; and in almost every instance, the expense of production may be diminished. By reducing the expense of production, we set free an additional portion of the produce, and this is just the same as if, with the original expense, we produced a greater crop; therefore none but the most efficient labour either of man, or beast, or implements, should ever be employed.

If farmers would adopt this plan, it is evident that the greater the amount of productive and efficient labour they use, the greater will be their return; all useless expenses should be extinguished, and the most efficient mode of accomplishing any labour should be adopted.—*Morton on Soils.*

IMPORTATION OF FOREIGN AGRICULTURAL PRODUCE.

We extract the following account of the Importation of Foreign Agricultural Produce into the United Kingdom, from a Parliamentary Paper (No 38), printed by order of the House of Commons, the 18th of February, 1839:—

BUTTER.—In 1837, imported 282,947 cwts.; retained for home consumption 266,161 cwts.; duty received 266,203*l.*—in 1838, 256,261 cwts.; for home consumption 252,132 cwts.; duty, 252,149*l.*

CHEESE.—In 1837, imported 237,732 cwts.; retained for home consumption 232,257 cwts.; duty 121,600*l.*—in 1838, 227,884 cwts.; for home consumption 219,354 cwts., duty 115,121*l.*

EGGS.—In 1837, imported 74,733,037: retained for home consumption 74,790,126; duty 25,991*l.*—in 1838, 83,745,723; for home consumption 83,817,789: duty 29,111*l.*

WHEAT.—In 1837, imported 455,872 qrs.; retained for home consumption 232,793 qrs.; duty 303,179*l.*—in 1838, 1,245,061 qrs.; for home consumption 1,740,806 qrs.; duty 136,011*l.*

BARLEY.—In 1837, imported 87,791 qrs.; retained for home consumption 47,475 qrs.; duty 21,268*l.*—in 1838, 2,203 qrs.; for home consumption 8,193 qrs.; duty 4,922*l.*

OATS.—In 1837, imported 416,425 qrs.; retained for home consumption 333,933 qrs.; duty 167,580*l.*—in 1838, 52,605 qrs.; for home consumption 11,070 qrs.; duty 6,263*l.*

RYE.—In 1837, imported 30,711 qrs.; retained for home consumption 19,575 qrs.; duty 8,484*l.*—in 1838, 1,781 qrs.; for home consumption 2,517 qrs.; duty 363*l.*

PEAS.—In 1837, imported 111,261 qrs.; retained for home consumption 87,615 qrs.; duty 40,865*l.*—in 1838, 28,709 qrs.; for home consumption 11,619 qrs.; duty 4,452*l.*

BEANS.—In 1837, imported 105,607 qrs.; retained for home consumption 109,075 qrs.; duty 46,146*l.*—in 1838, 64,019 qrs.; for home consumption 54,240 qrs.; duty 25,749*l.*

MAIZE, OR INDIAN CORN.—In 1837, imported

4,026 qrs.; retained for home consumption, 763 qrs.; duty 359*l.*—in 1838, 4,042 qrs.; for home consumption 3,124 qrs.; duty 254*l.*

BUCK WHEAT.—In 1837, imported 471 qrs.; retained for home consumption 298 qrs.; duty 136*l.*—in 1838, 1 qr.; for home consumption 174 qrs.; duty 107*l.*

MALT.—In 1837, 1 qr.; and in 1838, 92 qrs.

WHEAT MEAL, OR FLOUR.—In 1737, imported 364,249 cwt; retained for home consumption 40,187 cwts; duty 3,681*l.*—in 1838, 456,534 cwts.; for home consumption 392,847 cwts.; duty 10,522*l.*

BARLEY MEAL.—In 1837, 7 cwts.

OATMEAL.—In 1837, imported 3,865 cwt.; retained for home consumption 143 cwts.; duty 41*l.*—in 1838, 3,140 cwts.; for home consumption 4 cwts.; duty 2*l.*

RYE MEAL.—In 1837, imported 323 cwts.; retained for home consumption 9 cwts.

INDIAN MEAL.—In 1837, imported 529 cwts.; retained for home consumption 1 cwt.—in 1838, 3 cwts.; for home consumption 1 cwt.

HIDES UNTANNED.—In 1837, imported 338,652 cwts.; for home consumption 293,491 cwts; duty 36,656*l.*—in 1838, 346,348 cwts.; for home consumption 318,763 cwts.; duty 41,829*l.*

CLOVER SEED.—In 1837, imported 103,144 cwts.; for home consumption 124,965 cwts.; duty 124,650*l.*—in 1838, 92,539 cwts.; for home consumption 95,882 cwts.; duty 95,841*l.*

FLAX SEED AND LINSEED.—In 1837, imported 3,321,089 bushels; retained for home consumption, 3,394,843 bushels; duty 21,264*l.*—in 1838, 3,271,731 bushels; for home consumption 3,198,217 bushels; duty 19,967*l.*

RAPE SEED.—In 1837, imported 1,020,165 bushels; retained for home consumption 957,526 bushels; duty 5,988*l.*—in 1838, 713,260 bushels; for home consumption 713,959 bushels; duty 4,462*l.*

TALLOW.—In 1837, imported 1,314,649 cwts.; retained for home consumption 1,294,020 cwts.; duty 204,377*l.*—in 1838, 1,122,256 cwts.; for home consumption 1,166,177 cwts.; duty 184,401*l.*

WOOL.—In 1837, imported 48,379,708 lbs.; retained for home consumption 43,170,136 lbs.; duty 118,564*l.*—in 1838, 52,737,447 lbs.; for home consumption 56,734,625 lbs.; duty 164,454*l.*

THE FATE OF RACING HORSES.—Ambo, the fastest mile horse of his day, and that won the Holywell Mostyn Stakes three years in succession, was consigned to drag an opposition coach that ran through Shrewsbury. When no longer capable of that, he was degraded to yet lower labour, and was at length found dead in a ditch from absolute starvation. Hit-or-Miss, a good racer, was, during the last years of his life, seen drawing coal in a higgler's cart in the same town. Mameluke is at this time drawing a cab in the streets of the metropolis. And Guildford, after having won for his different owners seventeen years, was afflicted with incurable stringhalt, and was sold at a repository for less than 4*l.* Thence the hero of the turf was doomed to an omnibus; there he was cruelly used, the spasmodic convulsion that characterizes stringhalt sadly aggravating his torture. The skin was rubbed from his shoulders, his hips and haunches were bruised in every part, and his stifles were continually and painfully coming in contact with the pole. In this situation he was sent by the veterinary surgeon (the author himself) to "The Society for the Prevention of Cruelty to Animals," and bought in order to be slaughtered.—*Youatt's Work upon Cruelty to Animals (just published.)*

ON THE CULTIVATION OF POTATOES.

(ORIGINAL.)

The potato is an exotic plant, naturalized from Peru or some similar latitude of the western hemisphere, and generally allowed to have been imported into Britain by Sir Walter Raleigh, during the voyages he made to the new world. It belongs to the genus "*Solanum*," of class and order "*Pentandria Monogynia*" of Linneus, and to the order "*Solanæ*" of the natural system of Jussieu. Our botanists call it "*Solanum tuberosum*," and Ray adds the word "*esculentum*." The cultivated varieties are almost innumerable, arising from the differences of soil and climate, and from sexual connection; and like our varieties of the garden pea, will soon almost exhaust our vocabulary to find names for them, some hundreds of varieties having been lately arranged by our amateurs, and their different qualities explained. For common practical purposes, they may be all comprehended under two primary divisions; viz., "round and oblong," varying in all the colours of black and blue, white and red, pink and spotted. Generally speaking, the round varieties are more productive than the oblong, though on good soils the white and blue kidney are foremost in quality; while on inferior lands they are deficient both in quantity and quality. Each district of country, and very frequently each separate farm, is provided with a variety of its own, the cultivation of which is founded, like many others of our agricultural practices, more on caprice and fashion, than on any definite grounds of incontestible superiority. The Yam variety, streaked inside, was much cultivated at one time for feeding live stock; it is now much discontinued, the quality being so very bad, though the produce was immense. It may be desirable on any farm to have a common variety and an earlier one; the choice of these varieties will of course be guided, or ought to be guided, by the prolific quality on any particular soil and situation. No root yet discovered, and introduced to the notice of mankind, has yet attained such an extensive range of usefulness, from the table of kings and nobles, down through all the intermediate gradations to the feeding of pigs and poultry, we find this esculent every where employed in the scale of sustenance, affording support to the poor cottager and the labourer, whose means barely reach beyond potatoes and bread, and who look to this root as the firmest hope of subsistence. In many parts of the kingdom, and especially in Ireland, potatoes constitute the principal food of the inhabitants; so much so, that we are inclined to wonder how they lived before its introduction; as our sturdy moralist, Dr. Johnson, could not comprehend how the inhabitants of Scotland lived before the introduction of "kail" or brocoli. The property possessed by the potato plant, along with others in the vegetable kingdom, of propagating its species by seed and root, and the immense produce of tubers yielded by it, and the ready mode of applying the tubers for reproduction, and its almost certain success, must have greatly tended to facilitate the introduction and propagation of this plant; but we find it progressed very slowly, like many other benefits of which mankind cannot see the value. Its classification with the natural order of "*Solanæ*" identified it with the poisonous qualities ascribed to that family of plants, and the prejudice thence conceived against it, and the uni-

versal antipathy against anything new, poisonous or not poisonous, injurious or beneficial, seem to have operated in a heavy degree, and even at this day, after nearly a century of undoubted and extensive utility, we hear in objection to a more extensive cultivation, that the potato exhausts the soil. It is difficult to ascertain how our farmers have arrived at that conclusion; like many similar ones, it must rest on mere conjecture; and it is curious enough to hear such an argument advanced by farmers who sow wheat after a crop of oats. A very wise farmer in Suffolk told me he fully believed it was the case. I asked, how he knew. He said, he had an indifferent crop of wheat after potatoes, and he "thought" he would have had a better if he had planted the field with turnips. The conclusion here rests wholly on supposition—we have no proof whatever—and on similar foundations many of our current agricultural axioms and supposed truisms rest. During a very extensive practice of upwards of twenty years, I have never yet seen any difference in the grain crops; I have always got as good crops of wheat and barley after potatoes as after turnips, and the grass seeds generally better. How a green crop well manured, cleaned, and pulverized, can scourge land, is more than I have yet been able to see. No esculent yet known yields so large or so valuable a produce per acre; of more than double the value of the turnip, of much more certain cultivation on a far greater variety of soil and climate, and of a far greater variety of application in the uses for which they are cultivated than either the turnip, the cabbage, beet, or any other plant we know, we yet see the cultivation restricted and neglected, and many of our most fertile lands capable of producing all our known crops in high perfection, lying in a state of uselessness, notwithstanding all the boasted intelligence and enterprise of the present age. The uses of potatoes as food for human beings, are well known; raw or steamed they are excellent feed for farm horses, and for young cattle consuming straw in yards they are invaluable; and it has been lately ascertained from satisfactory experiments instituted by the Agricultural Society of Scotland, that for pigs they are best applied in a steamed state, and for feeding cattle the raw state is the most profitable application, the expenses of preparation included. Such an universal application of a single plant capable of being raised in almost any situation, would appear to warrant its cultivation to an extent limited only by physical circumstances over which human agency can have no controul; yet, on the contrary, we see weeds and mosses usurp the place of the food of man; grasses and weeds are cut and made into hay, the expenses of cultivation, we are told, are too heavy, but we are not favored with any account of the produce; potatoes scourge the soil, but corn crops in succession "do not." The great quantity of manure, the life of farming, derived from these crops is never reckoned, except the expense of using it, when got; the farmer jogs on, the landowner will not expend one shilling, and the land lies uncultivated, and the people are starved. With the knowledge of such plants as we possess, and with the means of cultivation in our power, it is both ludicrous and lamentable to hear our debates about a supply of corn from abroad as if cultivation could raise no more at home, and to see societies meeting and discussing further improvements and never adopting those that are known. I remarked in the course of some observations I lately made on the cultivation of

turnips, that the illustrious individual to whom we owe the potato was rewarded with the block, and that similar rewards were generally allotted to the benefactors of the human race. During their lifetime they can often barely support their existence—after death when honours are an empty sound, their actions are applauded, and their names enrolled in the page of history, and a statue is often erected to their memory, we are told, by a grateful people—but for what useful purpose I never could see, except to stand as a lasting memorial to posterity of the baseness and ingratitude of their forefathers.

The potato, like all other esculents we cultivate under the name of green crops, delights in a moist climate and deep loamy soils; and hence our best crops are obtained in Ireland and in the western parts of Scotland and England. In the cultivation of this root the drill system seems to have been early and universally adopted—we have no broadcast planting—even in gardens when planted by the spade, and in Ireland on the lazy beds, they are inserted in rows, to admit of cleaning and pulverization of the soil. In field culture, drilling by the plough is universally practised—the land intended for that crop is ploughed during winter, and in the spring so soon as the season permits, it is ploughed, harrowed and rolled to as fine a tilth as possible, every weed and stone being carefully picked off betwixt each process of working. In the beginning of May the drilling begins, and is performed in the same way as for turnips, except in being thirty inches apart instead of twenty-six or twenty-seven. Experiments have been made on drills three feet apart, but no superiority was visible. The drills being opened the manure partially heated from a corner in the field, or from the fold-yards, is brought forwards in one-horse carts, laid in heaps for three drills, and spread immediately. The potato sets cut on the same day or the day previous, are planted on the manure at the distance of 3 or 10 inches, and are covered by ploughs following close behind. A light roll follows to level the drills that the potatoes may braird equally. The ploughs being provided with drawing trees stretching over two drills, the left hand horse walks on the top of the drills, and thereby the sets are not disturbed in their places by the horses' feet. If the land be of a dry and warm nature, I have always found it very beneficial to apply the manure as full of moisture as possible, and to plant and cover without delay. In some places potatoes are planted in rows on a flat surface, by laying the manure with the sets in every third or fourth furrow after the plough, which will bring the rows to the average distance of 30 inches. This method is designed to keep the surface more flat to exclude the drought on dry lands; but if the drills be pressed down by a roll, the difference in evenness will not be material.

So soon as the potatoes are fully brairded, the scuffling plough is passed along between the drills, which cuts all the weeds within its reach; and in stiff loams small ploughs are used, which go deeper into the soil and raise more mould than the light scuffer. The hoers follow, and pass the hoe between each set, cut away every weed and break every clod, and loosen and pulverize the soil around the sets as much as possible. The scuffling ploughs continue working at intervals during the whole season; and when the weeds are all completely killed, and when the stems are nearly closing on the drills so as to prevent future horse-

hoeing, one or two deep earthings are given with the double mould board plough, and if any large weeds afterwards appear they are pulled by hand. A very erroneous opinion under the name of an established truth prevails among farmers that it is hurtful to plough the intervals of drills during dry seasons from the dread of dissipating the moisture, but I have ever found the contrary to be the case, as these plants imbibe much nourishment from the atmosphere, and there consequently exists a greater necessity for affording such nourishment from fresh stirred earth in dry seasons when there is a want of moisture from above. All esculents, and in fact any crops we plant, derive great benefit from pulverization.

Potatoes are liable to few diseases—the curl was very frequent in some districts for a long time past, and of late years the dry rot in the seed has appeared in many of our best potato growing countries, and has caused considerable damage. The partiality of the prevalence of this malady has completely baffled all investigation—every opinion has been overturned, and the subject remains as puzzling as before. The curl has been ascribed to atmospheric influence, and the dry rot may probably be owing to a similar hidden cause—but such diseases appear and disappear, and many both in the animal and vegetable world, vanish by degrees before improvements in general management, and leave us totally ignorant both of the cause of introduction and of disappearance.

Potatoes are ready for storing in October, and should be raised in a dry state. They are ploughed up or dug with forks, and in the most approved mode of storing they are laid in longitudinal heaps on a dry bottom and piled up to a narrow top of 3 to 4 feet in height, covered with a layer of dry straw, and then with a coat of earth. The thickness of covering will depend on the local severity of the climate—if frosts be severe, a covering of litter from the stable-yard is very useful. A temporary supply of potatoes is laid in the root-house for steaming or otherwise, and a favourable day is seized to open the pits for that purpose. The cultivation of an acre of potatoes will cost about 10*l.* exclusive of rent and taxes, and the returns will vary from 200 to 800 bushels per acre according to soil and climate. But taking the low average of 300 bushels at the low price of 1*s.* per bushel, there is ample remuneration for the farmer, and the remuneration will be ampler still if consumed in feeding live stock for the production of manure in all places except in the vicinity of towns, where a ready market can be got, and a supply of manure in return. An abundance of straw for manure cannot be got without using the means to obtain it—the great value of green crops in this particular has been long since acknowledged, but such is the tenacity with which our farmers cling to antiquated prejudices, that we see many a field of good loam summer fallowed to save expense, or growing an herbage of weeds under the favourite denomination of old turf. Potatoes admit of a much greater range of cultivation than turnips, and it remains to be seen if our modern system of tile draining will render our wet clays capable of growing green crops, but the object would seem of little importance so long as we have so many hundreds of acres ready for that purpose by nature and yet neglected, and so long as the present whims and prejudices are allowed to prevail over argument, reasoning, and experience.

Feb. 8*th*, 1839.

J. D.

ON THE EMPLOYMENT OF GAS-WATER AS A MANURE.

BY JOHN PAYNTER, ESQ.

SIR,—Observing that you invite communications on experiments in agriculture, I take the liberty of sending you the result of one with gas-water—the water in which the street-gas has been cleansed. Having often thought that the alkali therein contained must be favourable to vegetation, I was induced, a few years ago, to try it on a piece of barley-land. A quarter of an acre was taken in the middle of a field, of rather close soil, in a granite district. The land was of average quality. The gas-water was distributed over the quarter-acre by a contrivance resembling that of a common watering-cart, and at the rate of 400 gallons to the acre, about a week before seed-time. The rest of the field was manured in the usual way.

The difference, both in colour and vigour, of the barley-plant was so strikingly in favour of the part manured by gas-water, that persons passing within view of the field almost invariably came to inquire about the cause. The yield also was superior, as well as the after pasture, the field having been laid down with the barley.

The experiment was tried on the farm of Boslvin, about seven miles from Penzance. My distance from a gas-work has prevented me from following up the subject since; but I feel convinced that this water, so often complained of as a common nuisance, might be most profitably employed both in agriculture and horticulture. It might be poured on muck-heaps, where it would probably destroy grubs, &c., in addition to its fertilizing properties.

I am, Sir, your most obedient servant,
JOHN PAYNTER.

Boskenna, Jan. 9th, 1839.

NOTE BY H. HANDLEY, ESQ., M.P.

In confirmation of the foregoing letter, it may be observed that in many parts of the country, where gas-works are established, the refuse has recently become an object of interest to the agriculturist, as containing many of the essentials of the most effective manures. The refuse lime, which was formerly an inconvenience to the gas manufacturers, and was carted away as valueless rubbish, is now contracted for by neighbouring farmers (in an instance, within my own knowledge, at 7s. 6d. per chaldron), and applied either in compost or in a direct form to the land; where, in addition to the usual operation of lime, it is said to furnish a protection against many of the noxious grubs and insects.

It is further probable that the ammoniacal liquor which abounds in gas-works, and which, when formerly allowed to run waste into the Thames, was said to destroy the fish, and prejudice the quality of the river-water for human consumption, and which is still thrown away throughout the country, except at a few works where they manufacture volatile ammonia, will, ere long, be extensively used as a manure, either through the intervention of the water-cart, or by the process of saturating and decomposing soil or vegetable matter. A very satisfactory illustration, on a small scale, has recently been submitted to the English Agricultural Society by the intelligent curator of the Polytechnic Gallery, Mr. Pain. He put into a vessel some leaves of trees, saw-dust, chopped straw, and bran, to which he applied ammonia, and closed it up. In about three weeks the whole was reduced to a slimy mass: he then stirred it and added a little more ammonia; and when submitted to the Society it was reduced to a black mass of vegetable mould, strongly impregnated with volatile salts, and in comminuted particles similar to surface peat-mould.

I have reason to believe that, in an experiment on tanners' bark, now in progress in my neighbourhood, the results will be satisfactory. When applied in its liquid form to grass-land, like salt, it apparently destroys the plant, but the spot is distinguished by increased verdure the succeeding year.

THE PITCHER PLANT.—This plant abounds in the stony and arid parts of the Island of Java, from which, were it not for this vegetable wonder, small birds and quadrupeds would be forced to migrate in quest of water. At the foot stalk of each leaf is a small bag shaped exactly like a pitcher, furnished with a lid, and having a kind of hinge that passes over the handle of the pitcher, and connects it with the leaf. This hinge is a strong fibre which contracts in showery weather and when the dew falls. Numerous little goblets filled with sweet fresh water are thus held forth and afford a delicious draught to the tiny animals that climb their branches, and to a great variety of winged visitants. But no sooner has the cloud passed by, and the warm sun shone forth, than the heated fibre begins to expand and closes the goblet so firmly as to prevent evaporation, precluding a further supply till called for by the wants of another day. This beautiful and perfect provision of nature would afford a fine theme for a Thomson or Wordsworth, and would afford an illustration of the designs of Providence such as Paley would have delighted to press into his service.

LIQUID MANURE is called by the farmers of Switzerland *gulle*, in France it is called *lizier*; they obtain it by collecting the drainage of their stalls and stables into underground reservoirs or pits, where it is allowed to ferment until it attains a slimy or mucous state.* The mode adopted by the cultivators of Zurich is thus described in the *Bulletin de la Soc. de Geneve*:—"The floor on which the cattle are stalled is formed of boards, with an inclination of four inches from the head to the hinder part of the animal, whose excrements fall into the gutter behind in the manner usual in English cow-houses; the depth of the gutter is fifteen inches, its width ten inches; it should be so formed as to be capable of receiving, at pleasure, water from a reservoir placed near to it; it communicates with five pits by holes, which are opened for the passage of the slime or closed as occasion requires. The pits or reservoirs of manure are covered over with a floor of boarding, placed a little below that on which the animals stand; this covering is important as facilitating fermentation. The pits or reservoirs are made in masonry, well cemented, and should be bottomed in clay, well beaten to avoid waste. They should be five in number, in order that the liquid may not be disturbed during the fermentation which usually lasts four weeks. Their dimensions should be calculated according to the number of the animals held by the stable, so that each may be filled in a week; but, whether full or not, the pit must be closed at the week's end, in order to maintain the regularity of the system of emptying: the reservoirs are emptied by means of portable pumps. In the evening, the keeper of the stables lets a proper quantity of water into the gutter, and returning to the stable in the morning, he carefully mixes with the water the excrement which has fallen into it, breaking up the more compact parts, so as to form of the whole an equal and flowing liquid. During the day, whenever he comes into the stable, he sweeps whatever excrement may be found under the cattle into the trench, which may be emptied as often as the liquid it contains is found to be of the proper thickness; the best proportion of the mixture is three-fourths of water and one-fourth of excrement, if the cattle be fed on corn, but if in a course of fattening, one-fifth of excrement to four-fifths of water will be sufficient."

* Gardener's Magazine, vol. 5, p. 548.

AGRICULTURAL CHEMISTRY.

By HENRY R. MADDEN, ESQ., L.R.C.S. EDINBURGH.

(From the Quarterly Journal of Agriculture.)

We have now to commence the most important, but at the same time by far the most difficult, branch of our subject; namely the *Philosophy of Manure*, or the scientific principles upon which the cultivation of plants is founded. To accomplish this, with facility and perspicuity, it will be necessary to divide the subject into the following heads:—

I. To give a clear view of the objects to be attained by the application of manure.

II. An account of the composition, and respective value, of some of the more important manures.

III. An account of the circumstances which should guide us in the choice of manure, and its application to various crops.

IV. The economy of manure, or the methods to be adopted in order to produce manure as quickly as possible, and likewise to apply it to the greatest advantage.

I. There is no point connected with agriculture, in reference to which more incomprehensible statements have been laid before the public, than those which have from time to time, and more especially lately, been published upon the subject of manure; and it appears to me that these could never have been conceived, far less made public, had due attention been given to that branch of the subject, to which the present section is devoted, namely, the objects to be attained by the application of manure: these we shall now consider. We have already shown that by far the most essential point to be attended to in the cultivation of plants is to present to them a constant supply of organic matter, in a state capable of being rendered soluble in water; and we have moreover seen that this is accomplished, by adding to the soil, at certain intervals, various refuse matters, which are technically denominated *manure*, by which means all kinds of *dead* organic matter, are re-converted into *living* organized bodies; and consequently the objects of manuring may be described to be, the conversion of refuse matters into useful food; or in other words the duty and object of the farmer, is to *convert manure into crops*. This fact, however, appears to have been most determinedly overlooked by many late writers upon the subject, and in consequence there has been more nonsense and absurdity published in reference to this point, than one could have possibly imagined. Thus, for example, we are most seriously told by a late writer upon fluid manure, that “there are many plants which by distillation yield a strong *spirit*, which is so powerful a manure, that, from some experiments he has *himself* performed, he confidently looks forward to the time when the *manure* for an *acre of land* shall be contained in a *quart bottle*.” This statement is really almost too absurd to refute, were it not that the opinion appears to be gaining ground in some parts of England. I trust therefore that my more enlightened readers will excuse me for occupying some space in proving the impossibility of such a thing being accomplished. It must be evident to all, who will take the trouble to think of the subject, that the weight of the crop must always bear some proportion to the weight of the organic matter in the soil; for, of what do vegetables consist?—Of *water*, *organic matter*, and *earthy particles*.

Now the first and last of these are supplied by the soil itself (considered as a *mineral* substance) but the organized portions can be supplied to the plant only by organic matter, previously existing in the soil; for although plants do obtain some of their *carbon* from the air, still this is but an inconsiderable portion, and moreover much of the *carbonic acid* which yields that portion, has been supplied by the previous decomposition of organic matter. We may therefore infer, that should the above-mentioned author succeed in manuring an acre of land with the *contents of a quart bottle*, he will in time discover that the same article will be almost sufficient to contain his crop. But the believers of the above doctrine may say that the author has proved it by direct experiment, and consequently he must be either willingly deceiving the public, or must have some grounds for his statement. Now I have no doubt that the author is perfectly satisfied in his own mind that he is writing the truth, and I shall endeavour to show how he has been misled. His *powerful spirit*, was of course applied to *soil*, (probably very rich garden mould) and the result was that it had a most powerful effect upon the vegetation of that soil, and in fact its influence was felt by “many succeeding crops:” but this by no means proves that his spirit is really a manure at all; it may act only as a *chemical* agent in producing the more rapid decomposition of the vegetable fibre of the soil, and thus rendering it soluble; and consequently his crops were produced by the *original organic matter* of the soil, and not by his *powerful spirit*. For had he continued its application from time to time, and taken care to prevent any subsequent addition of fresh organic matter, he would have undoubtedly found that his soil became exhausted. Let any one who doubts this statement, take soil free from all organic matter whatever; for example, let him mix artificially chemically pure sand, clay, and chalk in the same proportions as they exist in the best soils; let him sow his seed, and then apply this *powerful spirit*, and observe the results; let him weigh the products, and then he will, beyond doubt, see the truth of the fact, that the weight of the crop is proportional to the weight of organic matter in the soil. If the object of a farmer was merely to obtain good crops for a few years, and afterwards to allow the land to lie waste and useless, then, indeed, some powerful stimulus, such as the spirit in question, would be of great value; but, what farmer, I ask, would so wilfully injure his own interest, by thus exhausting his soil, for the sake of procuring one or two good crops? Some persons, however, may remark, that it would be extremely difficult to prove the relation between the organic matter in the soil and the crop; for example, they might quote the case of turnips, where, in a good crop, two or more tons are produced, by a space of ground, upon which not more than one ton of farm-yard manure has been spread; and nevertheless there is sufficient nourishment left for several crops afterwards without any addition. I shall therefore shew the manner in which this relation is to be discovered, or at least point out some circumstances, which are liable to be overlooked, but which are of the utmost importance in any investigation of the kind. In the first place the real weight of dry organic matter in a crop is extremely small in comparison to the weight of the crop itself; for instance 25 tons of globe turnips are calculated to contain only two tons of solid matter, of which a part of course is saline. Hence in that

turnip there is not 8 per cent. of organic matter. The grain crops of course contain a far greater quantity, but even in them more than one-fifth is composed of water and saline substances. Secondly, the quantity of organic matter in soil is very liable to be underrated, as will be shown by the following calculation. According to the analysis of Sir Humphrey Davy and others, good soil contains about 11 per cent. at least of dry organic matter; now, taking nine inches as the depth of such a soil (which is by no means great), it will be found by calculation that one imperial acre will contain no less than 91 tons of dry organic matter, and hence, were the whole capable of being converted into turnips without loss, each acre of good soil would (theoretically at least) be capable of producing upwards of 1,200 tons of globe turnips before the land would be completely exhausted! A careful examination of these facts cannot fail to show to all, the fallacy of judging of the power of a manure by its effects when mixed with soil. Of course I do not mean by this to dispute the value of experiments with different kinds of manure on various crops; but merely have endeavoured to show that, when authors attempt to talk about concentrating manure to such an extent, that the contents of a *quart bottle* will supply nourishment to the crop upon *an acre of land*, they should, in the first place, prove whether their substance is really a manure, or merely a chemical agent; and certainly ought not to give publicity to any opinions performed in a manner so replete with fallacies. The following fact alone should be sufficient to silence at once all such idle propositions. We have every reason to believe that "*creation* has long since ceased and *conversion* alone continues to take place," or in other words, "*new matter* is never now produced, but merely *matter already existing* is constantly *changing its form*." Much more might be said with reference to this point, but we have subjects of far greater importance to engage our attention, than the refuting of such visionary speculations. To recapitulate, therefore, the objects to be attained by the application of manure may be stated to be, the preservation of a certain degree of richness in the soil, in order that the seed sown may be furnished during all stages of its growth, with a constant supply of organic matter, in such a form as to be capable of being absorbed; and moreover this organized matter being supplied by otherwise useless, and in fact injurious substances, one of the national advantages of manuring land may be said to consist in the conversion of noxious matters into useful and wholesome food.

II. In giving a general account of the composition and respective value of the more important manures, we must remember that there are many collateral circumstances to be taken into consideration, which, although they may be of no importance theoretically, are nevertheless of such great practical consequence, that, without due attention to them, no scientific account of manure can be of any value to the farmer. *Manures* are generally divided into *organic* and *inorganic* or *mineral*. Professor Low, in his excellent work on practical agriculture, adds an intermediate division of *mixed manures*, which will aid greatly the consideration of this extensive class of substances. Properly speaking, the organic and mixed are the only true manures, the purely mineral ones acting either as *chemical* aids by promoting putrefaction; as *mechanical* agents by altering the texture of the soil; or probably also as *stimulants*, by acting directly upon the roots of the plants themselves.

1. *Organic manures*. By adding organic matter to the soil, we are of course supplying plants with all that they require for their nourishment; nevertheless it is not sufficient that this organic matter should exist in the soil, it must be in such a state as to be capable of being absorbed by the roots of the plants; for which purpose we have already seen that its elements must be in that peculiar state of combination which has received the name of *humus*; or, to express it otherwise, in such a form as to be rendered soluble in water when exposed to the action of the spongioles. From this fact we may make several generalizations with reference to the respective value of different kinds of organic manure. Thus, *scientifically* speaking, a manure may be said to be valuable in direct proportion to the quantity of pure organic matter it contains, its tendency to decomposition, and its facility of being rendered soluble by this, and other changes which take place in it: *practically*, however, a manure may be said to be valuable in direct proportion to the length of time during which its influence is felt by the crops on the land to which it is applied; as also to its portability, to the facility with which it can be incorporated with the soil, and, *last not least*, to its cheapness, and the readiness with which it can be procured. Hence the most useful manure would be one which combined these several advantages, namely, one which was cheaply produced, easily carried, readily mingled with the soil, and when there, keeping up, by its gradual decomposition, a steady supply of *humus*, or other soluble organic matter. To discover such a manure, or, still better, to ascertain some method of imparting such properties to the manures in common use, would be one of the most valuable acquisitions to modern husbandry. That *chemistry* may in time be capable of doing this, there is little reason to doubt, all that seems necessary, being, that some person properly qualified should earnestly devote himself to the task. In the following remarks upon the nature and composition of the different species of manure, particular attention will be paid to these qualifications. For the sake of perspicuity I shall subdivide that class of organic manures into the *purely vegetable*, the *purely animal*, and the *vegeto-animal*.

(1.) The *purely vegetable manures* are, green plants, rape-cake, malt-dust, the steepings of the flax and hemp, straw, woody fibre, tanners' spent bark, &c.

Green plants are constantly used as manure, and are very useful for that purpose; they are seldom collected expressly, but are made use of on the spot where they grow; as examples of this, we may mention the ploughing in of grass, and the ploughing and hoeing of weeds during fallow and green crops. This manure consists chiefly of saccharine and mucilaginous matters mixed with ligneous fibre; and it consequently will be observed that it requires no preparation whatever; that it contains organic matter already in a soluble state, namely the sugar and gum, and the ligneous fibre itself is so moist and so completely impregnated with vegetable juices, that fermentation rapidly commences, and consequently a supply of soluble matter will be kept up until the whole is consumed. Care must be taken, however, in ploughing in green crops for manure, not to make too deep a furrow, especially on strong lands; as in that case the quantity of soil which covers the vegetable matter is so thick that it diminishes the action of the air, &c., upon it; and it is a well ascertained fact, that fermentation is retarded, if not altogether prevented, by compression and the exclusion of

air. The best period for ploughing in green crops (provided other circumstances permit of it) is undoubtedly when the plants are in flower, as at this period they contain the greatest quantity of sugar and mucilaginous matter; and, moreover, in the instance of weeds, it prevents the possibility of their propagating their species by the scattering of their seed. The importance of allowing this species of manure to ferment in the ground, instead of in a heap, is, that (in addition to the great saving of labour) the slowness with which the decomposition takes place, is supposed to tend to produce much more soluble matter and less gas than when it proceeds above ground. The parings at hedge roots, scouring of ditches, pond-weeds, &c., may be used in this manner.

Rape-Cake has been used with great success as a manure; this, like the preceding, contains a large quantity of vegetable matter, already in a state capable of being dissolved in water, its composition being mucilage, a large quantity of vegetable albumen, a little oil, and woody fibre. It has the advantage over the former of being much drier, and hence containing far more manure in the same bulk of material; but, on the other hand, it is by no means so easily produced, and is much more costly. It is chiefly used in fallow, before wheat, and should be sown *fresh*; and before its application should be kept as dry as possible, as moisture readily causes fermentation to commence, which, when once set in, will undoubtedly proceed with rapidity, unless the substance is carefully dried. And here we may make the general remark, that all substances which contain much fluid, and more especially such as are composed of mucilage, sugar, and other soluble matters, should be used when perfectly fresh.

Malt-Dust is mentioned by Sir Humphrey Davy as a good manure, on account of the quantity of sugar it contains. I have not, however, been enabled to meet with any particular account of its application; of course, if used, it should be allowed to ferment in the soil. The washings and other refuse of distilleries, I am informed, are much used in some parts of Ireland, as an application to grass lands, and their effects are stated to be very powerful. This, of course, will depend upon all the vegetable matter which it contains being soluble, and therefore very probably absorbed at once, without undergoing any decomposition whatever.

The next manure we shall mention, is one which can be applicable in a few cases only, on account of the local nature of its production; we refer to the *water in which flax and hemp have been steeped*. It is well known that flax and hemp consist of the woody fibres of these plants, and that one of the first steps in their manufacture is the steeping of the plants in water, in order that the softer tissues may ferment, and the ligneous fibre be thus freed from the useless parts of the vegetable: of course, therefore, the water in which these plants have been steeped, becomes fully charged with *soluble* and putrescent vegetable matter, and consequently acts powerfully as a manure, and moreover requires no preparation whatever, as fermentation has already commenced. It is not necessary, however, to dwell much upon this subject, as its use must, of course, be confined to those districts where flax and hemp are cultivated.

Sea-weeds. All sea-shore plants, especially those which grow below highwater mark, and which belong to the natural families of *Algae* and *Fuci*, &c., contain more or less *mineral alkali* (*carbonate of soda*), and have long been used as manure by the

farmers in the neighbourhood of the sea. They are, however, so succulent and mucilaginous that their effects are by no means lasting; even when placed in heaps and allowed to ferment, they produce but very little heat; in fact, appear rather to dissolve away. They consist chiefly of water, mucilage, a small quantity of woody fibre, and saline matter; according to the analysis of Sir Humphrey Davy, nearly four-fifths was water, which contained no *ammonia*, and consequently the plants possess no *azote*. When applied to land, their effects are felt almost immediately, as the mucilage dissolves as soon as the outer covering of the plants is destroyed by fermentation; but from its soluble nature, its effects are but slight, and after the first year, are no longer perceptible. The alkali they contain must also act as a chemical solvent, which will hasten their consumption. It has been proposed to collect the sea-ware, and dry it by spreading it like hay, by which means, of course, nothing but water will be lost, and at the same time, the bulk will be reduced to one-fifth, in which state the author considers it to be a very valuable manure, and calculates that it can be procured and carted off at half the price of straw. This suggestion, I think, might probably be useful in some of the farming districts which are situated near the sea, but still not close enough to use the ware in its fresh state, as undoubtedly the manure is a good one as long as it lasts. The drying, also, will prevent the decomposition from taking place so rapidly, as if applied when fresh.

Dry straw of wheat, barley, and other grain crops, and spoiled hay, are always useful manures. Sir Humphrey Davy, in speaking of these, adheres to the opinion which pervades the whole of his work upon Agricultural Chemistry, namely, that they should be applied fresh, and that if allowed to ferment, a large quantity of nutritious matter is lost. As this is a point more severely criticised than any other statement which his work contains, and as, moreover, it is one of extreme importance, I shall here enter fully into the subject, and endeavour to reconcile, if possible, the exceedingly discordant opinions which are entertained regarding it. To proceed, let us state the question. *Theorists* say, all manures should be applied to the soil as fresh as possible, because, during the process of fermentation, if allowed to proceed above ground, much valuable matter is lost which would otherwise have been available to the crops. *Practical farmers*, on the contrary, maintain, that experience has proved to them, that, unless the manure is fermented to a certain degree before it is applied, it is not of half the value; in fact, in many instances it greatly endangers the success of the crop. How, therefore, can these be reconciled? On careful examination we shall see, that here, as elsewhere, all the difficulties will vanish when *theory and practice* are brought jointly to bear upon the subject, in such a manner that the one shall correct the other; or, in other words, when the question at issue is compromised, so as to suit the purposes of the *farmer*, and at the same time, not contradict the statements of the *philosopher*. In the first place, we may take it for granted, that in all cases where *theory* is opposed to *successful practice*, the former will eventually be found to be at fault, for it is perfectly evident that the knowledge of the true theory must improve, instead of opposing those practices which time has shown to be most successful. Nevertheless, in the case before us, there is nothing *radically* wrong in the theory, but it has evidently been carried too far; in fact,

it has been worked out, (if we may use the expression), as a chemical problem, without due attention having been paid to the end in view; namely, the rendering of assistance to the farmer in his all-important operations. There is no doubt, for instance, that *carbonic acid* and *aqueous vapour*, are given out in abundance during fermentation, and also in the case of animal manures, *carbonate* and *hydrosulphate of ammonia*, all of which are in certain cases of great importance to plants. But it is not sufficient to prove a fact scientifically, and at once apply it to practice, for, unfortunately, such is the imperfect state of science at present, that there is scarcely a single instance where some modification is not required, when the two are brought to bear upon each other. For example, in the case in question, it is not sufficient to discover that some of the value of the manure is lost during fermentation, and in consequence, to argue at once that manure should be applied fresh; we must prove in addition, that by so doing the farmer will not injure his interests in any other way; that, when so applied, it will serve all his purposes as well as when previously fermented. This, however, we shall not be able to do, for the following reasons. What the farmer wants when he applies manure to his land, is, 1, to enrich the land in such a manner that it shall be immediately fitted for cropping, and hence, a part of his manure must be *already* prepared for use, namely, rendered *soluble*. 2, The substance applied must be in such a condition as to be easily incorporated with the soil, by the subsequent operation of tillage, and consequently must be in such a mechanical state, as not to interfere with these operations. Now it has been proved scientifically, first, that when vegetable matter, and still more so, when a mixture of animal and vegetable matters, are exposed in a heap to the joint action of air and moisture, the temperature soon rises; chemical changes take place; part of the *oxygen*, *hydrogen*, and *carbon*, go off in the form of *aqueous vapour*, and *carbonic acid*; and at the same time a part of the remainder is rendered soluble, either in the form of *humus* or some such combination; but, secondly, it has been proved that when these materials, instead of being heaped up, are spread out, and mixed with mineral matter, as when ploughed into the soil, the changes take place much more slowly; and lastly, it has been *conjectured*, but by no means proved, that when those changes take place in the soil, more soluble matter, and less gas, is formed, and consequently that the effects upon vegetables are more powerful. Let us compare notes: The first object of the farmer is to have supply of nourishment in a fit state for immediate use; but this can only be obtained by fermentation; and in the soil fermentation takes place very slowly; consequently, when fresh manure is applied, the seeds have a chance of having to wait for their food; and moreover, it is generally an acknowledged fact, with reference to all chemical changes, which masses of matter undergo, that these changes proceed much more rapidly, after they are once fairly commenced, than in the first instance. Again, fermentation softens and breaks down long straws, &c., which would otherwise make the husbandry extremely foul. This objection, in fact, presented itself to Sir Humphrey Davy, and to obviate it, he proposes the straw to be chopped before it is spread. The proper question for discussion, therefore, is not merely, as we have seen, whether fermentation is accompanied with loss: but whether the extra advantages

attending the use of previously fermented dung, will compensate for the loss sustained during its preparation. All practical farmers will doubtless answer in the affirmative; but even here we must be cautious how we generalize the principle. Practical men are at all times too fond of making general rules; for example, in the case before us, most farmers ferment their dung to a certain extent, *often much too far*, and then apply it to all purposes indiscriminately, whereas it is clear, that the necessity of fermentation, holds good only in those cases where an immediate supply of nutriment is required; and consequently, when a fallow is manured, or when the manure is ploughed in with the stubble in autumn, in preparation for the next year's green crop, the manure may be used in a much fresher state, especially on strong soils. This fact has been well illustrated in a paper on "A new method of applying manure," by Mr. Baker, of Nassau Cottage, near Leeds, which appeared in the 6th volume of this journal in 1836-7. The same plan is likewise mentioned in British Husbandry, in the Library of Useful Knowledge, under the article Manure, where it recommends the fresh manure to be laid on the stubble during winter, and the long straws raked off before the spring ploughing. It has been remarked, however, that the practice of ploughing-in raw manure in autumn, as preparative for the next year's crop, will not answer on light soils, as in this case a large quantity of the manure is lost; in fact I have been informed by an excellent authority upon such subjects, that nearly double the quantity in such soil is required to produce the same effect when applied in this way, as when fermented above ground, and ploughed-in immediately before the spring sowing. This I presume must depend upon the open texture of such soil, by permitting rapid fermentation and allowing the gaseous parts to escape, and likewise the soluble matters to be washed deep into the soil as soon as they are produced. Thus we at once see how to compromise the question, and we consequently leave it in the following position, namely that undoubtedly loss of manure is sustained by allowing fermentation to take place before it is applied to the land; but that this loss is more than compensated for, by the peculiar advantages of fermented dung in all cases where an immediate supply of nourishment is required. But on the other hand, that in those cases where the manure is to remain some months in the soil before the seed is sown, it should unquestionably be applied in a much fresher state, although even in this instance, incipient fermentation may be useful, by rendering it capable of being kept up with greater facility, under the disadvantageous circumstances in which the manure is placed, when mixed with soil. I do not, however, by any means wish it to be supposed, that I consider the question as settled, far from it; the above statement is merely a representation of the case as it at present stands; but obviously a great deal has yet to be learned, more especially with regard to the *science* of the subject. We must return, however, to the consideration of the individual manures.

MERE WOODY FIBRE.—At first sight one would be inclined to ask When is mere woody fibre ever employed as a manure? But if we consider a little, we shall find two substances at least, which have been proposed as manures, to consist chiefly, if not solely of this chemical compound,—I refer to the refuse of the *tan-pit*, and *peat*. Both of

these contain little or no substance besides mere woody fibre; for example, the operations of the tanner have removed all the soluble matter from the bark which he employs in his manufacture; and the long continued action of water has had the same effect upon peat. When we remember that the prime object of manuring, is to supply the plant with organic matter in such a state as to be capable of being dissolved in water, we must at once perceive that, theoretically, this manure is one of the worst possible kinds, if used in an unaltered condition, and practice has long ago proved the same fact; for Mr. Arthur Young, in his valuable "*Essay on Manure*," states, that "spent bark seems rather to injure than assist vegetation;" and it is well known that no plant can grow in soil where there is an accumulation of peaty matter. Mr. Young supposed that the injurious nature of tanners' spent bark, depended upon the astringent matter that it contained; but Sir Humphrey Davy has shewn, that the processes to which the bark is subjected, free it entirely from soluble matter, and that the injurious action most probably depends upon the bark having a great attraction for fluids, and at the same time being impervious to the roots of vegetables. On this account, therefore, the bark would absorb the soluble parts of the manure, and thus deprive the plants of their food as soon as it was prepared for them. Even Sir Humphrey Davy, therefore, allows that *mere woody fibre* requires to be fermented before being used as manure; since from the absence of all mucilaginous, saccharine, and other soluble matters, there is little or no tendency to decomposition, and consequently this must be brought about artificially; the best mode of doing which, is either to mix it with a quantity of hot lime, or to follow the plan proposed by Lord Meadowbank, of mixing it with farm-yard manure. The success of this latter method being dependent upon the fact, that if putrefaction commences at one point of a heap of organic matter it will undoubtedly spread through the whole mass. In reference to the action of lime upon peat, &c., we shall say nothing at present, as this will be fully treated of when we consider the mixed manures.

(2.) ANIMAL MANURES.—It is generally allowed that these require far less preparation, than those derived from the vegetable kingdom, since they have a much greater tendency to putrefy, and hence of course do not require to be heaped together in order to produce this effect; besides their mechanical form is seldom such as to interfere materially with the various operations of tillage. They are comparatively seldom used alone, but nevertheless require consideration here, in order that the subsequent remarks upon the *vegeto-animal* composts may be more fully understood. The chief of them are—the various kinds of excrement, urine, hair, woollen rags, feathers, dead animals, fish, blubber, and horn.*

Of the various kinds of *excrement, night-soil* is by far the most valuable. This substance has been long used by the Chinese, who mix it with one-third of its weight of marl, and dry it in cakes by exposure to the sun. These cakes are said to be void of all disagreeable smell. It is likewise pre-

pared with quick-lime in France, and sold in the form of a dry powder, under the name of "*poudrette*," in which state it is sown with the seed in the same manner as rape-cake; the admixture of lime is merely to prevent the disagreeable odour which this substance otherwise possesses. There exist many prejudices against the use of this truly valuable manure, but it is needless to say that these are entirely without foundation.* The other species of excrement which have been used as manure, are those produced by the various birds and animals which are kept in a domesticated state. These have been found to be of very different degrees of power; the most valuable is supposed to be that of the *pigeon*: this, however, can only be used where great numbers of these birds are kept. It is stated to contain 23 per cent. of soluble matter when recent, and hence will require no preparation before it is used. The next in order is the cleaning of *poultry houses*; this is very similar to the last, and of course is produced in much greater quantity. A good method of using these manures, would probably be, to form them into compost with earth, dry leaves, &c.; thus imitating the process which goes on in woods frequented by the wild pigeon, where the soil is found to be peculiarly rich and valuable. Of the excrementitious matters produced by the various domesticated animals, that of the *rabbit* is stated to be the most valuable; but of course it is liable to the same objections as those above mentioned, namely, the small quantity in which it is generally procured. Some farmers, however, have gone so far as to say, that it is profitable to keep rabbits for the sake of their manure; this, however, must be under very peculiar circumstances. Of the remaining manures of this order, that of the *sheep, horse, and swine*, are generally considered more powerful than that produced by *cows*. It is needless, however, to enter fully into the consideration of all these, as the whole of them act in pretty nearly the same manner, only with slight differences in their power. The composition of all this class of substances is the debris of the food taken by the animals, mixed up with bile and various other matters.

URINES.—These are all very powerful manures, but it is curious enough that, with one exception, they are all improved by putrefaction. The best way of using them undoubtedly is, to have the stables, &c., so constructed that all the fluid parts are carried into underground tanks, where they accumulate, and can either be raised by a pump and applied in the liquid form, or, which is probably the better plan when circumstances will permit of it, the tanks may be filled with porous earth, and the whole will then form an exceedingly rich compost: probably peat might be advantageously used for this purpose. In whatever way, however, this manure is applied, it is at all times most valuable. It abounds in *ammoniacal salts*, which have been supposed to be the cause of their injurious action when fresh, as it has been proved that solutions of these salts, unless extremely dilute, act injuriously upon plants; this, however, can hardly be the cause, as putrefaction increases instead of diminishing the quantity of ammonia. The one exception which I mentioned is the urine of the *sheep*, which is stated by all practical farmers to act as manure as soon as it is formed. Now, it is not easy to understand how this should

* *Bones* are often enumerated among animal manures, and their origin would certainly justify such an arrangement, but from the large proportion of earthy and saline matter they contain, they will be more conveniently treated of, under the head of mixed manures.

* Animalized carbon appears to owe its fertilizing powers to this substance.

differ from all other kinds of urine; but with the testimony of all farmers in its favour, it would certainly be worth while to have the point carefully examined into, before we endeavour to explain it.

HAIR, WOOLLEN RAGS, FEATHERS, &c., are all valuable manures, when they can be procured in sufficient quantity. All woollen rags are carefully collected by the inhabitants of the South of France, for the purpose of burying them at the foot of their olive-trees. Their composition appears to be chiefly gelatine and albumen. They decompose much more slowly than the generality of animal manures, and, consequently, will probably be found peculiarly useful in those cases where a supply of *nitrogen* is required during the latter part of the growth of a crop, as for example in wheat. This subject I shall revert to when speaking of the application of manure to various crops. In the manufacturing districts the refuse of the different woollen factories will be extremely useful in this respect.

DEAD ANIMALS AND FISH.—The former of these are very seldom used by the farmer, although it is evident that they would be extremely useful. Sir Humphrey Davy very properly proposes, that animals which die from disease or accident should (after having the skin removed) be covered with five or six times their bulk of soil mixed with lime, and allowed to decompose for some months, when the whole will be found to constitute a rich compost; the disagreeable smell of which may be prevented, by mixing lime with it when about to be turned. The refuse of slaughter-houses might be advantageously employed in this manner. Dead fish have been long known as a very powerful manure; they of course, however, are liable to the objection already stated, namely, the difficulty with which they are procured, except in certain situations. When employed, they must be mixed with soil and applied fresh, care being taken not to use too great a quantity, as they are very liable to produce rankness in the crop; their effects are felt for many years. The refuse of the fish-markets, and that of fishing-villages, ought on this account to be carefully collected, and made into compost. *Guano*, a most valuable manure, which occurs in the South Sea Islands, in beds of from fifty to sixty feet thick, has been analyzed by Fourcroy and Vauquelin, and found to have a composition similar to the dung of sea-birds. This will account for its value, as in that case it will consist chiefly of the debris of fishes, mixed up with the ordinary constituents of the dung of birds.

BLUBBER AND HORN are both very useful manures, when they can be procured; they both are composed almost entirely of animal substances, capable of being rendered soluble in water during putrefaction, and are at the same time in such a state that decomposition goes on slowly. We now come to the consideration of by far the most important of all species of manure, namely,

(3.) The *Vegeto-Animal* manures, or those which contain a mixture of animal and vegetable substances. These are chiefly the different varieties of stable-manure, &c., which are known under the name of "*farm-yard dung*." This, from its abundant production, and many other causes, is beyond doubt by far the most valuable manure at present known. For example, it is valuable in a scientific point of view, because, being a mixture of animal and vegetable matter, it ferments easily, supplies a large quantity of soluble matter, and from its nature is capable of

yielding nourishment to *all* kinds of vegetables. And practically, this manure recommends itself to the farmer,—1, Because it is necessarily produced in considerable quantities upon all farms where stock is kept; 2, Because from this circumstance, it is evident that none of the crops consumed on the farm can be considered as lost; and 3, Because experience has long ago shewn that no manure is so generally useful.

It is needless to attempt to state the composition of a substance which must be of necessity so various; a few practical remarks will be, therefore, all that I shall introduce here. In the first place, it will be evident to all that the value of this manure will differ greatly according to the relative importance of its different ingredients; as, of course, since animal matters produce the greatest quantity of soluble nourishment, the greater the proportion of this class of substances the more useful will the compound prove. Again, it has been shewn that the period at which it is applied influences greatly its beneficial effects; for if allowed to rot away until it is reduced to the state of a *soft, dark, unctuous mass*, not retaining any remains of vegetable structure, it can be easily shewn that more than one-half of its most valuable constituents have been lost. The remarks, however, which we have already made upon this subject of fermentation will, of course, apply here. It is stated in the Library of Useful Knowledge, in the article on British Husbandry, that the manure of fat beasts is much more valuable than that of lean cattle: this will very probably be the case, and, of course, depends upon the food with which the animals have been supplied. Thus, ten carts of dung from animals fed with oil-cake, were found equal to sixteen from those fed upon turnips. From this fact, therefore, it would appear necessary, that, in experimenting with this manure, we should pay attention to the food with which the animals have been supplied during its production. Much more might be said regarding the formation and management of dung-heaps; but this would involve us too much in pure practical farming.

We shall next treat of mineral manures, &c.

THE CORN LAWS.

TO JOSEPH HUME, ESQ., M.P.

SIR,—I find that you, and your colleagues, the Anti-corn-law Delegates, &c., fearing a complete defeat in your warfare against the landlords and farmers, propose now to enlighten their minds by the use of reason and argument—be it so—but why was not this mode of proceeding adopted in the first instance, instead of intimidation, threats of physical force, and low abuse? Instead of calling the landlords "selfish monopolizers," and the farmers "a set of ignorant chaw-bacons?" After this, you must expect the farmer to listen to you with some distrust, and to say, "*timeo Danaos et dona ferentis*." If, however, you can show that you have truth and justice on your side (which I doubt), you will succeed eventually. I am a farmer myself, and therefore I naturally feel interested in the question of a restricted, or a free, trade in corn. I claim protection for land and its cultivators, on two grounds; first, on account of its extra burthens; and secondly, in common with other classes,

in the general system of protection which exists, and justly so, to prevent the certain destruction (with free foreign competition) of almost all home producers, who use machinery only partially or not at all. I am aware that the cotton spinners now propose to abolish all protecting duties whatever; and I am not surprised at it, for to *them* they are of comparatively little value, because *they* have in a great degree superseded the use of dear manual labour, by cheap working machinery; which never can be done in agriculture, or in most other branches of industry. On the whole, you can hardly expect that general free trade can be permitted, whatever plausibilities may be urged in support of it. "Should twenty-four millions of people be prevented from dealing with the whole world? (says Dr. Bowring) that is the question." No such thing! The question is, whether they should be permitted to buy foreign commodities *duty free*, and thereby escape altogether (as consumers) the repayment of that tax, direct or indirect, which they could not escape, when buying of the home producer, who had before paid it in advance. No person can deny that all taxes, whether direct or indirect, should be borne by all classes of the community, in exact proportion to their means of paying; but how can this be secured under our present system of taxation, if we have a free trade in everything? Protection then, in some shape or other, is just and necessary, however difficult it may be to apportion it equitably. Our corn laws, and other restrictive laws, may answer their intended purpose tolerably well; but they are all objectionable on this ground—that they leave those of our manufacturers who depend on the export trade, exposed to great difficulty in the competition, in a foreign market. A drawback might perhaps remedy this evil; but a better way, by far, would be, to equalize the burthen of taxation; to abolish East, and West, India, Banking, and all other monopolies—to establish an entirely free trade in corn, and everything—and to give the necessary protection to *all* the productive classes, by a suitable standard of money; so as to keep the price of wheat, at, or below, the average of the last ten years, and all commodities at proportionate prices. And such prices being only nominally higher than on the continent, and bullion, or metallic, prices, being at the same level, abroad and at home, the balance between foreign and home industry, would be restored; and our export trade would be under no disadvantage. Let Dr. Bowring procure this, and then his twenty-four millions of people need not be "prevented from dealing with the whole world." The friends of agriculture have been asked on what terms they would surrender, and permit free trade. These are my terms; considering it to be a question chiefly between the non-productive and the productive classes:—I do not expect any such arrangement at present, but sure I am, that without something like this, a perfectly free trade in everything, or even in corn alone, can never take place, without producing such an enhancement in the value of money, as would ruin half the owners of land, and other real property, almost all the productive classes, and cause a convulsion in this country.

I well knew that you had always "advocated a free trade in corn," but I was not aware that you ever were an advocate also of "a free trade in every article of consumption;" nor of "a reduction in the expenses of the country, corresponding with the *natural change* which took place at the conclusion of the war." If in the "natural change,"

you include the effect produced by Peel's Bill, in restoring the ancient standard of money (which was always expected, 'tis said, as the certain consequence of peace), I do not see how this could have been done, except in wiping off nearly half of the public debt, or by a virtual reduction of it in adopting a new standard; for neither of which, do I think, you were an advocate. But let that pass. "The House (you say) took the most fatal step of all, by passing the corn laws of 1815." "If they had adopted that course which wisdom and policy pointed out, the landed interest (you think) would have pursued a very different course." What course do you suppose? I say, instead of corn laws, and other restrictions, and monopolies, everything should have been free, and the currency fixed by such a standard as would have kept money at something like the value in which two-thirds of the debt, and all private engagements had been contracted. (Herein I agree with Colonel Torrens in his late pamphlet.) Instead of this, Sir R. Peel's eloquence prevailed, and his Bill has been productive of more injustice, of more extensive distress and ruin, than any other law ever passed. Why do you not censure him for it? Why do you spare *him*? he never spares *you*. And now, Sir, let me ask how you, and other political economists, knowing what injustice and ruin has been the consequence of raising the value of money, can propose free trade, *unaccompanied by any other change*? A measure, which would certainly cause a further rise in money of 25 or 30 per cent., and a corresponding pressure on the productive classes. It is idle to expect that free trade alone, without any other change, would restore prosperity to the industrious classes. "It is one and the same cause, weighing like an incubus upon all the productive interests of the state; and it is vain for each class, selfishly, to seek relief; a remedy for the evil can only be obtained by one general measure, which shall in its operation give relief, at the same time, to all the productive classes of the community, agricultural, trading, and commercial." It has been asserted in public lately—*you, Sir, know where, and by whom*—that the labouring population of England was, at present, more miserable, and worse paid than that of any other country in Europe;" but the fact is, that agricultural wages in England are always nearly three times as high as on the continent, and the expense of living (in common years) is little more than one-third higher; manufacturing wages, I presume, bear the same proportion. It was maintained also, by the same person, at the same time and place, "that England was the most lightly taxed of all the corn growing countries in Europe."* Also, it was asserted, that the landed interest had received the exclusive protection of the legislature." All this may, for aught I know, suit the meridian of

* Mr. Cayley, in his reply to Mr. Villiers, gave a list of twenty-four European states, with the proportion of debt per head, thus:—

England	£32	0	0
Netherlands.....	23	5	5
Rome	7	9	0
France	5	19	7
Bavaria	2	16	0
Sicilies	2	11	2
Prussia....	2	7	7
Austria	2	7	6
Saxony	2	9	0

The rest varying from three shillings to £1 18s. The United States of America, Sweden, and Switzerland having no debts.

cockneyism, but the "ignorant" farmer will never swallow such absurdities.

At a late meeting of the Anti-corn-law Delegates Mr. Whitmore is said to have advised, that "no false statements, no exaggeration," should be used; truly this was not without reason.

I am, Sir, your obedient servant,
March 25th.

A FARMER.

ON SUBSOIL-PLOUGHING DRY LAND.

In the last number of the *Quarterly Journal of Agriculture* a question is raised as to the benefit of subsoil ploughing on land which has not been previously drained, and the writer animadverted strongly upon those who have affirmed that land will be benefited by the use of the subsoil plough, although it may not have been previously under-drained, and quotes Mr. Smith, of Deanston, as an authority in support of the negative of that proposition. It too frequently happens in literary disputation, that in the effort to obtain a victory of words, truth, which should ever be the object sought in argument, is lost sight of. There does not exist a doubt in our mind, that the propositions, that "subsoil ploughing without under-draining is beneficial," and that "subsoil ploughing without under-draining is not beneficial," are both equally true according to the circumstances under which the operation is performed. The land which Mr. Smith, of Deanston, occupies, and to which reference is so frequently made when this subject is discussed, being of a character calculated to retain surface water, therefore needs draining, and it is in reference to such soils that Mr. Smith asserts that draining should precede subsoil-ploughing, as the execution of the former operation without the latter, would have the effect of creating an artificial pan for retaining a portion of the water which would otherwise have run off the surface. But in soils of this kind the advantage of subsoil ploughing after draining is not confined simply to the additional facility afforded to the water to percolate through to the drains, but the opinion is daily growing stronger, that the subsoil may be much improved in fertility by being moved, and to a certain degree subjected to the effect of the air and atmosphere, and also that as has been shown in many instances when the ground has been dug deep, the roots of plants are enabled to penetrate more deeply into the soil, and derive a larger portion of nutriment. This is, we conceive a general statement of the benefit anticipated from subsoil ploughing after draining. The benefit of subsoil ploughing may therefore be denominated threefold—first, as affording facility to the escape of the surface-water into the drains; secondly, improving the character of the subsoil; and thirdly, enabling the roots of plants to penetrate deeper in search of nutriment. Now then comes the question, may not subsoil ploughing be beneficial to lands which do not require draining, in the two last modes, that is, by improving the character of the subsoil, and by enabling the roots of plants to penetrate deeper in search of nutriment? This is in reality the question which the writer in the *Quarterly Journal of Agriculture* at-

tacks so fiercely, and which he virtually admits, but seeks to avoid by a bold assertion, in making which he must presume greatly upon the ignorance of his readers. Observing upon the remarks of the writer, whose position he seeks to overthrow, the author of the article in the *Quarterly Journal of Agriculture* says—

"Unconscious as our critic seems to be of the pernicious consequences involved in his peremptory answer of 'decidedly not,' he, nevertheless, smooths down a little of its asperity by imagining a reason for it that thousands of acres exist which may not want draining. 'Thousands of acres' he immediately adds, 'which may not (he does not say *do not*, but only assumes, *may not*) want draining, may be essentially improved by breaking up the substratum; (the subsoil we presume is meant) as for instance, hard chalks and sharp gravels.' That there are thousands of acres scattered in detached patches over the country, which really and truly do not want draining, is very possible, but that there are one hundred contiguous acres in one place, which do not want draining, that is, would not be the better for draining, is an assertion which a pretty extensive observation of the face of the country will not permit us to believe."

That "there are not one hundred contiguous acres in one place, which do not want draining,"—that is, would not be the better for draining—"is a proposition which will, we feel persuaded, startle very many of our readers. They will, we have no doubt, agree with us in thinking that the individual who could make such a statement has but a limited knowledge of the surface of this kingdom. As, however, a little practical experience is worth a great deal of theory and argument, we shall point the first instance of the benefit of subsoil ploughing on a dry soil which has come under our notice. It is now about six years since Sir Edward Stracey, Bart., invented a subsoil-plough, which is known by the name of "The Rackheath Plough;" of which an engraving and description appeared in the seventh volume of *The Farmer's Magazine*.

This subsoil-plough was invented especially for, and employed with the greatest advantage upon a dry soil. After an experience of four years, being convinced of the benefit derived by its use, Sir Edward Stracey liberally sent a model to the Messrs. Ransome, in order that the agricultural public might reap the advantage of his invention, and we know that the Messrs. Ransome has since made several of them. It should also be observed that this plough is equally efficient in subsoil-ploughing heavy clay lands. In *The Bury Post* of the 23rd March, there is an article on draining and subsoil-ploughing, from which we take the following extract in support of our views:—

"Scotland has taken the lead in this improvement,"—(that is, draining and subsoil-ploughing)—"but Norfolk is fast treading in her steps. Hitherto, indeed, the subsoil-plough has chiefly been confined to our hard, gravelly, or chalky-bottomed land, where it is scarcely less efficacious than on wet clays. Sir E. Stracey observed in a letter to the writer, 'I have broken up nearly 500 acres of heath-land with this plough; my crops have been almost doubled, the wheat produced on the land so broken up has been plump and fine, weighing 63½ lbs. per bushel, and has fetched the best price in the market; when, before the deep ploughing, the same land scarcely produced the seed, and the wheat so poor and shrivelled, that nobody would look at it.'"

AN ESSAY ON THE SIMPLEST AND EASIEST MODE OF ANALYSING SOILS:

TO WHICH THE PRIZE OF TWENTY POUNDS WAS AWARDED IN DECEMBER, 1838, BY THE ENGLISH AGRICULTURAL SOCIETY, TO THE REV. W. L. RHAM, A.M., VICAR OF WINKFIELD, BERKS.

It is presumed that the object of the English Agricultural Society, in offering a prize for the best account of the cheapest and simplest mode of analysing soils, is to encourage farmers unacquainted with chemistry to make experiments on soils of known fertility, comparing them with others, in order to discover the circumstances which chiefly influence fertility, and the means by which less fertile soils may be improved.

The writer of the following Essay has no expectation that the little light which his experience enables him to throw on this subject should be thought worthy of a prize, even if no better mode of analysing soils should be offered by men fully acquainted with all the mysteries of chemistry. But as it may furnish hints to those who are interested in the progress of scientific agriculture, he ventures to describe a very simple mode of analysing soils, which he has found useful in practice, if not so absolutely perfect as those which are recommended by chemical writers.

Every practical agriculturist will allow that, besides climate, exposure, and other local circumstances, the fertility of a field depends more on the texture and division of the component parts of the soil, and its consequent affinity to water, than on the absolute proportions of the simple earths of which it is composed. Thus, a sandy or siliceous soil, of which the particles are extremely minute, readily diffused through water, and slowly deposited, approaches to the nature of a clay-loam, being retentive of water, and binding in drying. The hard particles of argillaceous or calcareous stones, on the other hand, according to their size, have qualities very analogous to siliceous gravel or sand, the chemical properties of the earths not coming into action, except by means of other chemical agents. But the organic portion of the soil, which arises from the decomposition of animal and vegetable substances, has the greatest influence on the fertility, by modifying the effects of sand or clay, and furnishing the real nutriment of plants by its action with light, heat, air, and moisture. It appears from this that the chief object, in a practical agricultural analysis of a soil, is to ascertain the relative size of the particles of which it is composed, their chemical nature, their affinity to moisture, and the quantity of organic matter intimately blended with the earths. Any adventitious substances which may influence the fertility ought to be detected, if possible; but, unless these are in a sufficient quantity to produce a decided effect, they may in general be neglected.

It must be kept in mind that it is not a chemical nor a mineralogical analysis which is attempted to be described: it is a mere examination of the soil, which may be sufficient for the purposes of the farmer, and which the man of science may carry on to any extent and accuracy; we will only carry it so far as can be followed by any man of common information, however deficient in chemical knowledge.

We proceed to the description of the process we recommend. The soil to be examined must be

taken a few inches under the surface, and in different parts of a field. If there appears much uniformity, the portions may be mixed, in order to have the average quality of the soil; should there be a visible difference between one portion and another, which is often the case, each may be analysed separately.

A portion of the earth to be analysed is dried in the sun or near a fire, until it feels quite dry in the hand. It is then reduced to powder by the fingers, or by rolling it on a deal board with a wooden roller, so as to separate the particles, but not to grind them: any small stones above the size of a pea must be taken out. If these form a considerable part of the soil, their proportion must be ascertained by weight; their nature and quality may be afterwards examined. This being a very simple operation, and obvious to the sight, need not be described. Where the stones and pebbles are evidently accidental, they may be overlooked, as having little influence on the fertility. The dry earth, cleared from stones, should be accurately weighed; and it is convenient to take some determined quantity of grains, as, 1000, 500, or 250, according to the accuracy of the instruments at hand. This portion should be put into a shallow earthen or metal vessel, and heated over the fire, or a lamp for about ten minutes, stirring it with a chip of dry wood: the heat should not be so great as to discolour the wood. It may then be allowed to cool, and be weighed again; the loss of weight indicates the water which remained uncombined after the soil appeared quite dry. This is the first thing to be noted.

The power of retaining water, without any external appearance of moisture, is greatest in humus, next in clay, both of which readily absorb it from the atmosphere; carbonate of lime does so in a less degree, and siliceous sand least of all. This moisture occupies the pores of the soil, and is very different from the water which is combined with clay as a part of its substance, and to which it owes its ductility: for when this last is expelled by a great heat the clay loses its quality, and approaches to the nature of sand. Pounded brick will not bind with water; and porcelain reduced to a fine powder has all the properties of siliceous sand in the soil. The finer the division of the particles of the soil, the greater will be its power of absorbing and retaining water; but in a soil where clay greatly predominates the lumps sometimes become so hard and baked by the sun that the moisture cannot penetrate, and in this case the power of absorption is much diminished. Hence loams in which there is a good proportion of humus have a greater power of absorption than the pure earths. Taking all circumstances into consideration, it will be found that the soils which most readily absorb moisture are also the most fertile, and therefore it is important to ascertain their power of absorption.

This can be found by comparison. Equal portions of different soils, dried as before, are placed in the opposite scales of a good balance, and left exposed for some time to a moist atmosphere. That which preponderates has the greatest power of absorption; the degree is measured by the difference of the acquired weights.

Another important circumstance is the specific gravity of a soil. The different earths have very different specific gravities; and humus being lighter than any mineral earth, the lightness of the soil is a sure indication of its richness, excepting where this lightness is occasioned by an excess of undecomposed vegetable matter, or peat. Humus, when

nearly pure, has a specific gravity varying from 1.2 to 1.5; fine porcelain clay, 2; chalk, about 2.3; siliceous sand from 2.5 to 2.7: mixed soils have specific gravities varying according to the proportions of their component parts. Those in which clay, chalk, and humus abound, and which are generally the most fertile, are the lightest. The sandy soils are heavier, and the more so if they contain oxydes of iron or of other metals; and it is well known that the ferruginous sands are the most barren. The common expression of *light*, when applied to a sandy soil, has no reference to its specific gravity, but merely to the force required to plough it. No carrier would say that a loose sandy road was a light one.

The easiest and readiest method of determining the specific gravity of earth, or any substance which is of a loose texture, is that described by Dr. Ure in his *Philosophy of Manufactures*, (page 97,) as employed by him to ascertain the specific gravities of cotton, wool, silk, and flax. It is as follows:—Take a narrow-necked phial capable of holding four or five ounces of water; mark a line round the middle of the neck with the point of a diamond or a file; fill the phial up to the mark with river or rain water, and poise it with sand or any other substance in a scale; then put 1000 grains weight in the same scale with the phial, and pour out water till the equilibrium is restored. In the vacant space, which is evidently equal to the bulk of 1000 grains of water, introduce the soil till the water rises to the mark in the neck. Then put into the opposite scale grain weights sufficient to restore the equilibrium. The number of grains required for this purpose will denote the specific gravity of the soil compared to water as 1000. Suppose, for example, that siliceous sand, which is 2.7 times denser than water, is poured into the vacant space, it will require 2700 grains to fill the space occupied by the 1000 grains of water; and thus we have the specific gravity without any calculation. If instead of 1000 grains, we use only 500, or 250, the result will be the same, if we multiply the grains in the other scale by 2 or 4.

We will give a few examples of soils of which the specific gravity has been carefully determined.

A rich garden soil, which contained per cent.,

Clay	52.4
Siliceous Sand	36.5
Calcareous Sand	1.8
Carbonate of Lime	2.0
Humus	7.3

had a specific gravity of 2.332.

A good loam consisting of

Clay	51.2
Siliceous Sand	42.7
Calcareous Sand	0.4
Carbonate of Lime	2.3
Humus	3.4

had a specific gravity of 2.401.

A poorer soil, of which the component parts were

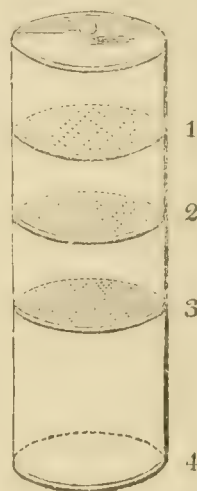
Siliceous Sand	64.0
Clay	32.3
Calcareous Sand	1.2
Carbonate of Lime	1.2
Humus	1.3

had a specific gravity of 2.526.

These examples suffice to show that the specific gravity of a soil is some tolerable indication of its fertility. It cannot, however, be entirely relied upon in the absence of other proofs; for there may be many different mixtures of earths which will have

the same specific gravity, although they may differ greatly in their fertility; but it will facilitate the analysis, and often detect mistakes in the process, if the result does not accord with the specific gravity found.

We proceed now to the analysis. The portion of soil which has been deprived of all its water, as described above, must be sifted through metallic sieves of different fineness; the first is made of a perforated tin plate, the holes of which are about one-twentieth of an inch in diameter. Whatever does not go through this is put by. The remainder is successively passed through two or three more sieves, increasing in fineness to the last, which is of the finest wire-cloth, having from 150 to 170 threads in an inch: whatever passes through this is an impalpable powder. Thus we have already a division of the soil according to the size of its particles:—1st, the coarse grit left in the first sieve; 2nd, the finer grit in No. 2; 3rd, fine sand in No. 3; and 4th, impalpable powder, which has passed through the last sieve. To facilitate this part of the operation the sieves may be made so as to fit into one another, like the filterers in a coffee biggin, the last fitting into a tin pot which will hold about a pit of water; a cover being made to fit on the top sieve, the instrument is complete. (See Fig.) Thus all the sifting may be done at once, without any loss. Any lumps which



are not thoroughly pulverized must be broken. The coarser sand left in sieve No. 1 must now be washed with pure water to detach any fine dust adhering to it; what runs through may be used to wash No. 2 in the same manner, and then may pass through No. 3 to the impalpable matter which passed through all the sieves. A sufficient quantity of water must be used to render the whole of this last nearly fluid. There will then be three different portions of the washed soil left in the sieves, and a portion of impalpable matter diffused through the water in the lower division of the instrument. This last is the principal object of analysis, and that to which Sir Humphrey Davy usually confined his attention, merely noticing the proportion of coarser sand in the soil. It contains, no doubt, the great principle of fertility and nutrition; and the effect of the coarser parts may be considered as chiefly mechanical. But they may much affect the fertility of the finer parts, and are of the greatest importance to the soil in which they are blended: they consequently deserve a more minute examination, to which we will return. In the mean time our attention shall be directed to the composition of the finer earth in No. 4, which is mixed with water in a semi-fluid state. This is well shaken, and suddenly poured into a deep glass vessel, and allowed to settle for a few minutes, when the heavier earth, which is sand, will be deposited, and the lighter may be poured off suspended in the water. It requires some little practice to effect this at once, but a few trials will soon enable any one to do it. This operation may be repeated until all the sand, of which the particles are visible to the naked eye, is separated. The earth and water decanted out of this last vessel are now poured into a glass tube, 18 inches long (No. 1.), the bore of which is less than an inch; one end

is stopped with a cork fitted into it, and the other has a small lip for the convenience of pouring out the contents. In a short time there will be a further deposition of earth, which will be principally alumina. What remains suspended in the water over it is gently poured off into another similar tube (No. 2): this will contain nearly the whole of the humus, which will take some hours to be deposited in the form of a fine brown mud. The contents of the tube No. 1 may now have a little more water added to them; after being well shaken, the tube may be set upright, and left for half an hour to settle: what remains suspended in the water after this must be added to the humus in the tube No. 2. After some time this will also be deposited; and the clear water may be decanted off. The mud which remains is put on filtering-paper in a glass funnel, and, when all the water has drained from it, it is dried over the fire, and weighed. This is the most important portion of the soil.* The fine earths deposited in the tube No. 1 will consist of very fine particles of sand, clay, and perhaps carbonate of lime. The sand will appear deposited in the bottom of the tube. The clay may be easily diffused in the water above it by stirring it carefully with a small rod without reaching the sand. It may then be decanted off with the water into another tube (No. 3), and allowed to settle; this part of the operation may be carried to a great degree of perfection by great care, and by examining the results occasionally with a small microscope; but for all common practical purposes it is sufficient to separate the vegetable earth from the mineral, and the visible particles of sand from the finer.

The contents of No. 1 having been collected, as well as those of No. 3, are dried over the fire and accurately weighed. The same is done with the earths which remain on the sieves.

All the water in which the earths have been diffused and washed is collected and passed through filtering-paper, and then set over the fire in a common saucepan. It is boiled away gently until it is

reduced to a small portion, which begins to look turbid. The complete evaporation is finished in an evaporating-dish, as slowly as possible, and the residue is the soluble matter contained in the soil. It will be sufficient to dry and weigh this, as its further analysis would require more skill and chemical knowledge than we suppose in the operator. Salts may be detected by the taste, or by the crystals formed in the evaporation, but, unless there is a decided saline taste, the whole may be considered as soluble humus, and the immediate fertility of the soil depends greatly on the quantity of it.

To recapitulate what has been obtained,—we shall have the coarse grit in sieve No. 1; the sand in Nos. 2 and 3; the fine earth separated in the tubes Nos. 1 and 3; the humus in tube No. 2 and on the filtering-paper; and the soluble parts in the evaporating-dish. All these substances must be well dried over the fire, as was done with the soil at first, and each separate part accurately weighed. The sum of them ought to be equal to the original portion of soil subjected to analysis after the water was driven off; but there always is a loss, even with the most experienced analyser. This loss will be principally in the finer parts, which are dissipated in the operation.

But the analysis is not yet completed: we have separated the sand, clay, and humus; but there may be a portion of carbonate of lime, in the form of sand, or of finely-divided earth mixed with the other earths. To ascertain this, each portion, excepting the humus, is put into a separate cup, and a little muriatic acid, diluted with four times its weight of water, is poured on it. If there is any effervescence, it shows the presence of carbonate of lime; diluted acid is then added gradually, as long as the effervescence is renewed by the addition. When this ceases, and the water continues to have an acid taste, more pure water is added, and each portion separately filtered, dried, and weighed. The loss of weight in each gives the quantities of carbonate of lime dissolved by the muriatic acid, and which has passed with the water in the form of muriate of lime.* The different weights being now collected, the result of the operations may be set down.

There may be many mineral substances in the soil, which this mode of analysing will not detect; and some of these may materially affect the fertility. In most cases there will be something to indicate the presence of metals. Iron abounds in most soils: when the quantity is considerable it will be detected by pouring a decoction of gall-nuts into the water which has washed the earth; it will immediately become of a bluish dark colour. The other metals are not of frequent occurrence. Sulphate of lime or gypsum, and also magnesia, are found in some soils; but the separation of them can only be effected by those who are well acquainted with chemistry: they fortunately occur very seldom, and the places where they are found are generally well-known. For all practical purposes it is sufficient to ascertain the

* The dark mud which is last deposited, and which we call humus, for want of a better name, contains no doubt a considerable portion of extremely fine earth, which may be detected by heating it red-hot in a crucible, until all the carbonaceous matter is burnt and converted into carbonic acid gas. This may be accelerated by throwing into the crucible small portions of nitrate of ammonia. The oxygen of the nitric acid will unite with the carbon, and the nitrogen and ammonia fly off in the form of gas, leaving no residuum but the mineral earths and salts. But the organic matter being destroyed by this operation, its quantity alone can be discovered. The vegetable matter, which gives the soil its fertility, all other circumstances apart, and which appears in various forms, according to the degree of decomposition it has undergone and the circumstances under which it has taken place, may be obtained by dissolving it in a caustic alkali, and precipitating it by means of an acid. The precipitate has been named *humic-acid* or *ulmic-acid*, and has often been confounded with humus, or vegetable mould. It is no doubt a component part of humus; but it is not found pure and uncombined in the earth, as far as we know. The real humus is a very compound substance, and exists in so many forms, that the experiments, which have hitherto been made, have not much increased our knowledge of it. It would be worthy the labour of some of our greatest chemists to trace the progress of vegetable decomposition, under various circumstances, and to detect the regular change which takes place in the arrangement of the elementary component parts—carbon, oxygen, hydrogen, and occasionally nitrogen—as the living vegetable dies, and is gradually transformed into humus, when deposited in the earth.

* It may be objected to this mode of ascertaining the carbonate of lime, that the muriatic acid will dissolve iron, and a portion, however small, of alumina, as well as carbonate of lime, and that the collecting the carbonic acid evolved is a more exact measure of the quantities of the carbonate. This may be admitted, but we repeat that we only propose a simple and easy analysis, which will approximate to the truth, and not by any means a perfect one. We hope some more perfect, and no less simple, analysis will be invented by those who are masters of the science of chemistry.

proportion of sand, clay, carbonate of lime, and humus which any soil contains.

Many soils which have been highly manured contain portions of undecomposed vegetable substances, and fibres of roots; these will be found mixed with the coarser earths separated by the sifting: not being a part of the natural soil, they need not be taken into the account; but they may be separated by washing the earths, as they are much lighter, and will come over in the first decantations. They may be dried and weighed, and the quantity set down in the result, if it is desirable.

Some very barren sands, containing very little argillaceous earth or humus, may readily be known by the copious sandy deposit which they rapidly make when diffused through water. Good natural loams are not so easily judged of; but the preceding mode of analysis will in general detect their intrinsic value. When a soil contains peaty matter, it is easily discovered by the irregular black particles which are visible in it. Peat differs from humus only in being in a different state of decomposition, and containing a considerable portion of tannin; when acted upon by lime or alkalies, and brought into a state of greater decomposition, it is not to be distinguished from humus in its qualities.

The only instruments absolutely required for the foregoing analysis are, in the first place, two good balances, one capable of weighing a pound and turning with a grain, and one weighing two ounces and turning with the tenth part of a grain.* Next, the combination of sieves, which we have described, and which may easily be made by any tin-smith. But any sieves of the required fineness, whether of metal, horse-hair, or silk, provided they be of the proper texture, will answer the purpose for a trial. Some earthen or glass jugs, and two or three glass tubes, 18 inches long, open at both ends, which may be obtained at any glass-blower's, or chemist's, a glass funnel, and some filtering paper will complete the apparatus. The only chemical substance indispensable to the analysis, is some muriatic acid, commonly called spirit of salt. A little test-paper to detect acids in the water with which the soil has been washed, and an infusion of gall-nuts to ascertain the presence of iron, may be useful. A small glass-phial will serve for the specific gravities. The whole of these instruments and materials may be procured for a very small sum. If the foregoing process is carefully followed, any person, however unaccustomed to chemical operations, will soon be enabled to satisfy himself as to the composition of any soil of which he desires to know the comparative value. He must not be disheartened by a few failures at first. However simple every operation may appear, it requires a little practice and much patience, if we would come to a very accurate result. Every portion must be dried to the same degree before it is weighed;—minute portions which adhere to the vessels, when dried, must be carefully collected by scraping, and brushing off with a feather;—pieces of filtering-paper, and of linen must be weighed before they are used, that small portions of matter adhering to them may be ascertained by the increase of weight. By attending to these particulars, it is surprising how nearly the whole original weight is

* If there is a doubt of the accuracy of a balance, the best mode of weighing is to poise the substance to be weighed with fine sand, and then substitute weights for it, till the sand is poised again. If a certain portion is to be weighed, poise the given weight with sand; then remove the weight, and poise the sand with the substance to be weighed.

accounted for in the summing up of the separate parts.

If this mechanical analysis should be thought lightly of by experienced chemists, let them only carefully analyse a portion of soil by this process, and then another by any more perfect mode, and compare the importance of the results, as regards practical agriculture. The object is to ascertain the productive powers of the soils; and, for this purpose, the separation of the different earths is sufficient, in the present imperfect state of our knowledge of the mysteries of vegetation.

The process which we have described, simple as it is, may yet be too tedious for the farmer who is desirous of speedily comparing different soils; and we will indicate a still simpler method of ascertaining, nearly, the composition of a soil, and a simple instrument by which it may be done. Take a glass tube, $\frac{3}{4}$ of an inch internal diameter, and 3 feet long; fit a cork into one end, and set it upright; fill it half-full of pure water; take nearly as much water as has been poured into the tube, and mix with it the portion of soil which is to be examined, in quantity not more than will occupy 6 inches of the tube; pour the mixture rapidly into the tube, and let it stand in a corner of the room, or supported upright in any way. In half-an-hour it may be examined. The earths will have been deposited according to the size and specific gravity of their particles. The portion still suspended in the water may be allowed to settle; and there will appear in the tube, layers of sand, clay, and humus, which may be measured by a scale, and thus the proportions nearly ascertained. When a farmer is about to hire a farm of which the quality is not well known to him, he may be much assisted in his judgment by this simple experiment, if he has no time or opportunity for a more accurate analysis. For the glass tube, may be substituted one of tin or zinc, 2 feet in length, with a piece of glass tube, a foot long, joined to it by means of a brass collar or ferule with a screw cut in it which is cemented to the glass, and screws on the metal tube; and thus the instrument may be made more portable. When the water has been poured off, and the earths only remain, the cork may be taken out, and the contents pushed out on a plate, by means of a rod and a plug which exactly fits the internal diameter of the tube. They may thus be more particularly examined.

The result of various accurate analyses of soils shows that the most fertile are composed of nearly equal quantities of siliceous and argillaceous earths in various states of division, and a certain proportion of calcareous earth, and of humus in that state in which it attracts oxygen, and becomes soluble, giving out at the same time some carbonic acid. No chemist has yet been able to imitate the process of nature in the formation of this substance; and the circumstances which are most favourable to it are not yet fully ascertained. Here is the proper field for the application of science and accurate chemical analysis.

As an example of an analysis may be useful to those who may desire to try the proposed method, we will add one actually made under very unfavourable circumstances, and without any apparatus. The only instruments at hand were scales and weights of tolerable accuracy, three glasses, a foot long and $1\frac{1}{4}$ inch in diameter, belonging to French lamps, a tin coffee-strainer, a piece of fine gauze, and a very fine cambric pocket-handkerchief. A little muriatic acid was obtained at the apothecary's.

The soil to be analysed was taken from a piece of

good arable land on the south side of the slope of the Jura mountains in Switzerland. Its specific gravity was taken as described before, and found to be 2.358 nearly. 500 grains of the dry soil were stirred in a pint of water, and set by in a basin.

To save time, 500 grains more of the soil were weighed after having been dried over the fire. It was well pulverised with the fingers, and sifted through the coffee-strainer, then through the gauze, and lastly through the cambric handkerchief. Some portion was left behind at each sifting. The two first portions were washed in the strainer and the gauze. The residue was sand of two different degrees of fineness, which, when dried, weighed, the coarser 24 grains, the next 20 grains. The earth and water which had passed through the strainer and the gauze, were now strained through the cambric and left some very fine sand behind, which dried, weighed and added to what had remained in the cambric when sifted in a dry state, weighed 180 grains. All that which had gone through the cambric was mixed with water in a jug and stirred about. The heavier earth subsided, and the lighter was poured into one of the lamp-glasses which had a cork fitted into it, and was placed upright. In about two minutes there was a deposit, and the lighter portion was poured into a similar glass, where it was left some time to settle. In this, a slower deposition took place, and in about a quarter of an hour the muddy water was poured off into the third glass. The three glasses were placed upright, and left so till the next day. In the first glass was some very fine earth, apparently clay; in the second, the same, but more muddy; and in the third nothing but thin mud.

The contents of No. 2 were divided between No. 1 and No. 3 by pouring off the muddy part into No. 3, after some of the pure water had been poured off, and the remaining earth into No. 1, they were then left to settle. As much water as appeared quite clear over the sediment was decanted off. The sediment was poured on a plate by taking the cork out of the tube, which was cleaned with a piece of fine linen, which had been carefully dried and accurately weighed. The plates were examined, and some of the lighter part, which floated on the least agitation, was poured from one plate to another, until it was thought that all the humus had been separated. Most of the water could now be poured off the earths, by inclining the plates gently, without any muddiness. It was, however, passed through a piece of filtering-paper which had been previously dried and weighed. The earth was slowly dried, by placing the plates on the hearth before a good fire, until they were quite dry, and so hot that they could not be easily held in the hand. The deposit left in the jug was poured on a plate, and a little muddy part, which was observed, was poured off with the water on another. This was again transferred, and the finer added to that which was in the second plate.

Collecting now all the separate portions, there were found,—

Of coarse sand	24 grains.
finer sand	20
very fine sand	180
clay deposited in the jug	
and first plate, dried....	240
deposit in the second plate	24
— on the filtering-paper	1½
— on the linen rag....	½
	490

Leaving 10 grains to be accounted for.

Each portion, except the three last, was now put into a cup, and diluted muriatic acid poured over them; an effervescence appeared in all of them, which continued on the addition of diluted acid, and when the contents of the cups were stirred with a piece of tobacco-pipe. They were left till the next day, when all effervescence ceased, and the calcareous part seemed entirely dissolved; pure water was added to dissolve all the muriate of lime which had been formed. After some time, the clear liquor was poured off, and the remainder was strained through filtering-paper, and dried on plates before the fire. The earths were now found to weigh, respectively, 20, 17, 162, and 182.5 grains, having lost 4, 3, 18, and 57.5 grains of calcareous earth dissolved by the acid.

The soil and water which had been put by in a basin were now repeatedly stirred and poured into a filterer, and more water was passed through the earth to wash out all the soluble matter. All the water was boiled down and evaporated, and left two grains of a substance which had the appearance of a gum with a little lime in it. Thus the loss was reduced to eight grains, a very small quantity, considering the means used in analysing the soil.

The corrected account therefore is as follows:—

Specific gravity, 2.358.

Siliceous sand	{ Coarse	20 grs.	} 199 grs.
	{ Finer	17 "	
	{ Very fine	162 "	
Calcareous sand	{ Coarse	4 "	} 25 "
	{ Finer	3 "	
	{ Very fine	18 "	
Impalpable earth	{ Clay	182.5	}
	{ Carb. of lime	57.5	
	{ Humus	26	
Soluble matter.....		2	
Loss		8	
			500

Or, in round numbers—

40 per cent.	Sand,
36 "	Clay,
17 "	Calcareous earth,
5 "	Vegetable earth, or humus,
0.5 "	Soluble matter.

From the composition of this soil, it is evident that it is a most excellent loam, capable of producing, with good tillage and regular manuring, every kind of grain, artificial grasses, and roots commonly cultivated. The field from which the soil was taken was always considered to be of superior quality.

This example will suffice to enable any one to analyse any soil of which he desires to know the component parts, so far as they affect the general fertility. To ascertain minute portions of salts or metals, or any peculiar impregnation of the waters, must be left to practical chemists.

To those who may be inclined to try the analysis of soils it may be interesting to compare the results of their own experiments with some which have been obtained with great care. Thaër, in his very excellent work on rational husbandry, written in German and translated into French, has given a table in which different soils analysed by him are classed according to their comparative fertility, which is expressed in numbers, 100 being the most fertile. This table is the result of very patient investigation, the natural fertility of each soil being

ascertained by its average produce with common tillage and manuring. It is as follows :—

No.	Clay.	Sand.	Carb. of Lime.	Humus.	Comparative Value.	
1	74	10	4	11½	100	Rich alluvial soils.
2	81	6	4	8½	98	
3	79	10	4	6½	96	
4	40	22	36	4	90	
5	14	49	10	27	..	The value of this could not be fixed, as it was grass-land ; perhaps bog earth.
6	20	67	3	10	78	
7	58	36	2	4	77	Good wheat and barley-lands.
8	56	30	12	2	75	
9	60	38	Very little carbonate of lime.	2	70	
10	48	50		2	65	
11	68	30		2	60	Barley-land, not fit for wheat.
12	38	60		2	60	
13	33	65		2	50	
14	28	70		2	40	Poor sand, fit only for oats or buck-wheat.
15	23½	75		1½	30	
16	18½	80		1½	20	

ON DRAINING AND SUBSOIL- PLOUGHING.

The light of experience is beginning to dissipate the scepticism which even a very short time since prevailed upon the effects of draining and subsoil-ploughing. Scarcely a publication devoted to agricultural subjects appears in which the merits of draining, subsoil-ploughing, and trench-ploughing, with the several methods of performing these operations, are not discussed. "The Farmer's Magazine," published on the 1st of April, contains an article "On Subsoil and Trench Ploughing," and also "On the cheapest and most effectual mode of Furrow-draining." Both these articles convey a great deal of valuable information, deduced from actual practice. In the former a description is given of a new plan for attaching the horses to the subsoil-plough, and by which three horses will execute the same quantity of work with as much ease as four, by the old method. The question of the comparative advantages of subsoil and trench-ploughing has been raised, as it seems to us, very erroneously, and it has been asked, "When land has been properly under-drained, which is the right treatment of the subsoil? Will you bring a portion of it immediately to the surface by deep ploughing, or will you delay this operation for some years, until the subsoil shall have been mellowed, after having been broken and penetrated by the atmosphere?" It appears to us that this question is, in other words, will you subsoil-plough and trench-plough at the same time, or will you postpone trench-ploughing to a future period? We hold subsoil-ploughing

and trench ploughing to be operations wholly distinct, and depending upon principles altogether different. The primary object of subsoil-ploughing in wet land is to render the subsoil more perviable, so that the surface-water may more readily pass off into the drains. It will, we believe, be readily admitted that the nature of the soil immediately beneath that portion of the surface which is usually stirred by the plough, and which is commonly called the subsoil, is as diversified in its varieties as the surface soil itself. The experiments already made will, we think, warrant the conclusion that *whatever be the character of the subsoil* in wet lands after under-draining, benefit will be derived from subsoil ploughing. Not so as regards trench-ploughing. The first question to be enquired into when that operation is contemplated is, "what is the character of the subsoil?" If the subsoil be of good quality, as is the case in many parts of the country, then the bringing a portion of it to the surface will add new fertility to the surface soil, and trench ploughing may not only be performed with safety, but advantage. On the other hand if it be of an inferior character, and wanting in fertility, if, as frequently happens, the surface soil has been made productive a few inches deep only by the operation of the plough and the harrow, by exposure to the atmosphere, by the decay of vegetable matter on the surface, and by the application of manure, then the bringing a portion of the subsoil to the surface, would perhaps be not merely to slightly injure, but perhaps to poison the surface-soil for years. The propriety of bringing a portion of the subsoil to the surface, therefore, or in other words, trench-ploughing, has no direct connection with subsoil ploughing, further than that a bad subsoil may be improved by being stirred, and thus at some future period become fit to be brought to the surface. This, however, brings us back to the real question to be enquired into before you proceed to trench-plough, or bring subsoil to the surface, "what is the character of the subsoil?" It is by the misapplication, and not by any inherent defect in the operation of trench ploughing that it has in some cases failed, and got into disrepute.

MILL STONES.—Buhr stones sometimes contain no organic forms, at others they seem as if stuffed full of fresh-water shells, or land shells and vegetables of inland growth. There is no exception known to this arrangement; but the shells have assumed a silicious nature, and their cavities are often bedecked with crystals of quartz. The best buhr stones for grinding corn, have about an equal proportion of solid matter and of vacant space. The finest quarry of them is upon the high ground near La Ferte sous Jouarre. The stones are quarried in the open air, and are cut in cylinders from one to two yards in diameter, by a series of iron and wooden wedges, gradually but equally inserted. The pieces of buhr stones are afterwards cut into parallelopipeds, called panes, which are bound with iron hoops into large millstones. These pieces are exported chiefly to England and America. Good millstones of a bluish white colour, with a regular proportion of cells, when six feet and a half in diameter, fetch 1,200 francs a piece, or 48*l.* sterling. A coarse conglomerate sandstone or brevier is in some cases used as a substitute for buhr stones, but it is a poor one.—*Ure's Dictionary of Arts.*

TO THE EDITOR OF THE FARMER'S
MAGAZINE.

SIR,—In my letter of the 6th current, I stated some thoughts that had occurred to me on the subject of an agricultural college, and of experimental farms, and I now trouble you with a few observations on the same subject. I proposed to have professors for every science any way connected with the improvement of the earth; not that I expect the Mosaic miracles of our ideal speculators, but it would satisfy the present rage for scientific discovery, and if any aid may by chance result from such investigations, a full and ample opportunity would be afforded, and would show that every means were used that are within the reach of human power. An objection has been raised that we could not find persons qualified for the different offices; an absurd objection certainly, and which applies equally to any office whatever. When a vacancy occurs in any establishment, or when a new one is proposed, we never see any want of qualified persons, "or supposed to be so"—the scramble takes place between the high attainments of the applicants, so pre-eminent that it is difficult to distinguish the most meritorious, as we are told. We may as well say that the London University or any other seminary could not go on from want of qualified persons, and we must suppose that the art of agriculture possesses its students and votaries as well as any other in the corresponding ratio of improvement. It only remains as in all similar cases whatever, to get the best qualified the present time can afford—the next generation will do the same—no fears need be entertained on this head, for in a case of total failure we can get "Colonels and Captains" in abundance; we cannot grumble to be taught as we teach others, and we must recollect that agriculture is known to every person in any profession, for I have never met one single individual who was not capable, and in "his own opinion" of giving directions on the subject; and moreover a Duke or a Lord has only to affix his magic name, and the person so recommended is at once qualified for the business, though he does not know that sheep are without teeth in the upper jaw, or a Leicester ewe from a down; and though he has been stamped an incurable block-head by the almighty fiat of his Creator. Any fears on this head are wholly visionary, and in fact unreasonable, for we can get the best that the time affords, and no other art or science can have more, and we cannot have the improvements of the next generation before they are discovered.

A farm of from 400 to 600 acres seems best adapted in size for most purposes, as fully employing a capable superintendant and a working bailiff under him. A larger size creates much loss in distant carriages, and in walking to and fro, and if separate buildings be erected, it becomes two farms. I mentioned seven farms as likely to comprehend the varieties of soil and climate; and I may add a hill or grazing farm occupied wholly by sheep and partly by cattle, and employing one plough.

ORIGINAL COST.

Erection of College, containing Museum and necessary accommodations	£10,000
Stock on eight farms of 500 acres at 3,000 <i>l.</i>	24,000
Building for ditto, and accommodation for students	10,000
	44,000

YEARLY COST, FOUR PROFESSORS.

Practical Agriculture	1,000
Chemistry	1,000
Botany, Zoology, and Natural History	1,000
Mineralogy and Geology	1,000
	4,000
Curator of Museum	300
Eight farming superintendants at 300 <i>l.</i>	2,400
Eight under-bailiffs at 80 <i>l.</i> each	640

£7,340

The produce of the farms is supposed to pay the other expenses of labour—the one farm helping the other.

Rent of 1,500 acres of turnip land, at an average of 30 <i>s.</i>	2,250
— of 1,000 acres of dairy farms, at 35 <i>s.</i>	1,750
— of 1,000 acres of clay fallows, at 20 <i>s.</i>	1,000
Two more farms, hill and grazing	600

5,600

7,340

£12,940

Say 15,000*l.*, allowing for contingencies.

The Central College would serve the three kingdoms, and the farms, 8 or 9, might be so arranged as to be situated in, and comprehend the greatest possible variety of locality in the three countries. The allowance to the professors is handsome in order to secure qualifications, and to afford residence and correspondence at home and abroad, and undivided attention on the subject. It is possible that the labour and experiments on the farms might not require the whole produce—in that case the yearly cost would be lessened, but profit must not be calculated upon, so as to check the enterprize expected, and for which they were instituted. No fees are charged from the students, either at the college or on the farms; the only expence is for board and lodging, it being the great blunder in all our seminaries for education of any kind that the expence is beyond the reach of the people. About 100,000*l.* would purchase the farms, and would reduce the yearly cost by nearly one-half; the whole to be directed by a responsible Board, and a Professorship may be added for the theory and practice of gardening: and the gardens of our nobility in different parts of the kingdom, where young men are received on easy terms, afford a field for learning the practice. And our market gardens exhibit a specimen of cropping and of cultivation from which our farmers may take a lesson, and to which I would refer our writers and phrasemongers to see the usefulness of the art reduced to practice. They have neither college nor society—they cultivate the earth by every best known means, and they push production to the utmost. In my opinion such a garden as Mr. Fitch's at Fulham would impart a very beneficial equivalent to a young farmer for a year's attendance in it.

Some such system combining theory and practice, and directing the energy of a people on the point in view, is in my opinion absolutely necessary to ensure any beneficial result, for nothing can be expected from isolated and detached attempts. An outlay of 100,000*l.* to 150,000*l.* with a yearly cost of 8,000*l.* to 12,000*l.* in case of purchase: or an outlay of 40,000*l.* to 50,000*l.* with a yearly cost of 10,000*l.* to 20,000*l.* in case of renting, is a mere mite compared with the thousands and millions we have seen and yet see squandered on useless purposes, of no benefit to the people, on pensions, posts and sinecures, to keep them in ignorance, and to debauch and corrupt them.

Without this primary art no others can exist; to advance such an art by the produce of itself, is only rewarding the people for their labour, and promoting the benefit and comfort of all classes of society. The great thing to be attended to, is to have such an institution sufficiently comprehensive to make it effectual. Polemical subjects would be at once excluded, science and practice being the whole and sole object. An infusion of liberal ideas is more required at present than practical instruction, for no man can teach another who has determined not to be taught, and who is convinced that no improvement can be made. Our essays and pamphlets on the corn laws at the present time are amusing enough, each party are confident they are in the right, and that their predictions will be exactly fulfilled, despite the experience of centuries. Little credit can be attached to either side, for neither can command the irresistible current of events which baffle all human calculations. I read lately a statement from a farmer who told us that the manufacturers are prospering greatly, and amassing large fortunes; now what is the reason of his doing so? One is that he has adopted every discovery of science and practice to increase the number of his articles at the least possible cost.

Again we are told that an importation of corn from those cheap growing countries would throw our wheat lands out of cultivation; I remember having heard the same prediction in 1828 when the present laws passed, and no such event has happened, cultivation has increased, and will increase if we had lower duties or none, for we invariably see competitors increase the extent of every business in order to make up in quantity what is lost in price. Wool is still grown, and sells well notwithstanding the reduction of taxation. Every kind of produce is grown cheaper in Scotland and in Ireland, and is brought to England and sold at a profit, and reasoning on this principle, we would cease growing in England because it can be grown cheaper elsewhere, or impose an equalising duty on these countries, which I am often surprised I have never heard proposed, as in the absurd case of the tax on whiskey coming from Scotland. But though these countries may supply us with a part, they never can afford a total supply, and consequently cultivation must go on to give employment, food and raiment to the people at some price or other, and that on the obvious and simple principle that if the spring be cut off, the rivulet must cease to flow. In order to liberalize the minds of men, a general education is absolutely necessary as well as professional, and most certainly there is at present most ample room for liberalization in the agricultural world, for the correspondence between the culture of minds and the culture of lands will be found to possess more similarity than is generally imagined. Well may the manufacturers laugh at us drudging on in the habits of our forefathers, holding meetings and instituting societies for promoting improvements, while those that are known are wholly neglected, and even despised and ridiculed. If any improvements be adopted they must descend in a shower of gold without any cost, for on this point we all stumble, and it effectually stops any alterations, and it is useless to deny or blink the assertion. Farmers tell us that an importation of corn would cause too low prices and throw our labourers out of employment, while they at the same time, for their avowed purpose of saving labour, keep much land in grass, producing in many places weeds and mosses cut and made into hay. A thrashing machine also diminishes labour, most truly it does so and intentionally too, on a non-productive point, in order to apply it to

the increase of articles produced. On the other hand, these machines are said to employ too many hands and to cause too much expence, a position in direct opposition to the other, and wholly unintelligible; and they are condemned, along with many more implements, because the labourers do not like them, just as if vessels must never have been propelled by steam because the common sailors did not approve of it. But I have proved already, and can prove at any time, that a thrashing machine with the necessary erections is cheaper by one-third in the original outlay than the timber barns now used, and that they produce the result of thrashing a quarter of wheat at one-third, and in case of inanimate power at one-sixth the expence of flails. Now I would just beg leave to ask our farmers and land-owners, if any manufacturer, artizan, mechanic, or commercialist be known to persist in using a more expensive process in two respects of producing their articles, or of doing any business whatever after a cheaper has been known to him, proved and established? With what grace can they complain of distress or cost of production, when they will not lessen it? Many similar instances could be adduced, which taken together have thrown the farmer wholly into the background and that by their own negligence. If the "expence" of alterations and of introducing improvements be objected, "as usual," then we would have had no improvements of any kind introduced, and fully confirms my observation that this dread of "expence" lays prostrate any energy or enterprize that may exist in the agricultural world, and constitutes the difference so visible between them and other producers. In order to remove such absurd and incomprehensible ideas from among us, and to teach us to think and reason and draw conclusions like other men, in order that our speeches, essays, and pamphlets may not look one way and our practice the very opposite, in order that we may no longer on that account be held up to ridicule, and that our practice may no longer belie every word we utter about our anxiety for improvements, while at the same time we never introduce any—a general and professional education on a liberal, systematic and comprehensive basis, seems the only remedy that may learn us to open our minds to conviction, to think and reflect from reason, experience and observation, and then to "suit the action to the word." On this latter point we have floundered over head and ears in the "Serbonian bog," for on the "actions" the result of the whole process, scientific, speculative and practical, entirely depends. But in the present temper of the agricultural world, if any professor in such a seminary (if ever we have one) have the presumption to advance any new opinions, only one quarter of a century in advance of us; if he tells us to introduce machinery, to produce cheaper, or to plough up an "old turf" of weeds to yield more food, and mere employment, of which we are so anxiously fond as to exclude machinery and foreign corn, and at the same time keep old turfs for the very purpose of preventing it—if he jostles our prejudices in any shape or form, or recommends any the smallest deviation from our fixed notion that every method is wrong which we have not seen and adopted—if he has the hardihood to think for himself, and the moral courage, like Locke, to despise the fashion of knowledge; and like Roger Bacon, scorn to follow it—he has sealed his own doom, for he may just as well oppose a bulrush to the flowing tide as set reason in opposition to prejudice, and I can tell him from experience that by no subsequent conduct can he atone for the heinous transgression of presuming to differ from us, and of not

thinking as we do, and above all things of recommending the ploughing of "old turfs" which would inevitably ruin us and break our hearts, though producing weeds, &c., useful only in rotting sheep. Such a proceeding would, we are told, employ too many hands and cause too much expence in cultivation; the very purpose we effect by not employing machinery; if not cultivated, no employment is given and we commit the supposed fault of machinery, without seeing it. But could not the hands unemployed from using machinery be employed in cultivation and thus increase the quantity of produce? No foreign corn would then be wanted. It is to be hoped that the means now used and proposed will be attended with success—the progressive motion of reason and of moral force, if it cannot induce may compel alterations, and agriculture may soon take its place as the first and the foremost as it is the most useful of arts.

J. D.

16th March, 1839.

PRESERVATION AND PREPARATION OF MANURES.

In the nomenclature of agriculture we have two sorts of manure, natural and artificial. By the former we mean simply a return to the soil of vegetable substances in various states and stages of decomposition; by the latter the application to it of animal and marine substances, or of other earths possessing different qualities from that upon which, to use a medical term, they are exhibited. This definition does not, perhaps, strictly delineate every shade of the distinction between natural and artificial manuring; but sufficiently so (in the absence of a better) to present that distinction clearly to the mind, without which the subject cannot be theoretically discussed or practically experimentalised upon with any certainty of our keeping in what Bacon calls the "straight path of discovery." To what new sources of improvement that path may eventually lead us, as regards artificial manuring, it is impossible for the most sanguine to tell, because it has as yet been very inefficiently explored. Indeed, all our discoveries on it have been the results of mere accidental observation, not of pre-determined research, and may be considered as no more in comparison with what may be expected from such research, scientifically and industriously prosecuted, than the few grains of precious metal which the Indian peasant casually picks up in the bed of the streams compared with what may be extracted from the bowels of the mountain from which it runs. The same union of philosophical and practical knowledge by which the mineralogist and engineer have literally opened veins of inexhaustible wealth, may some day be metaphorically used to the same purpose by the chemist and agriculturist, in extorting from nature her secrets of fertilization by artificial manures. At present we know little more than what she by chance presents to us on the surface. With the natural manures it is different. From the time when agriculture became fixed, that is, since the cultivators of the soil, being no longer able to range at will in search of fresh land, became stationary on particular tracts, and were compelled to search for the means of repairing the exhaustion of continued cropping; from that early time, what we call natural manuring has been practised; and it would be strange if, after centuries of observation, the properties of the various substances used in this way,

deleterious as well as beneficial, according to the soil to be invigorated, were not properly understood by every farmer possessing moderate judgment and information. Still has the *preservation* and *preparation* of these simple substances been strangely neglected even in our own age—even in our own country—and even by the most careful and intelligent farmers amongst us. By the preservation of them we mean the preserving and promoting their fertilising powers. Into how few farm-yards can we go without at once perceiving that, to the management of a manure-heap no attention whatever is paid, except, perhaps, when a hand happens to be unoccupied, it is employed to *tidy it up*, and that not out of any care for the manure, but for the greater spaciousness or cleanliness of the yard. Indeed, there are many farmers who, if you were to name such a thing as the *management* of a manure-heap, would laugh at you in your face as a finical and whimsical pains-taker. It is, however, a point not only of mere economy, but of the greatest consequence to the productiveness of the farm. The fertilising power of manure does not lie in the name of it; it acts upon the soil and upon the seed by chemical properties, and those of the most subtle description. It also, in its progress towards that state which renders it most fit for the field, acts upon itself; and the degree of its excellence must, in a great measure, depend upon this action being properly sustained, whereas, in a manure-heap carelessly thrown together, the action in one part is violent to destructiveness, and in another does not take place at all. It can no more be said to enjoy a healthy fermentation than a man to enjoy a healthy warmth of vitality, one part of whose body is in a state bordering upon spontaneous combustion, and another cold to conglolation. Take, for instance, stable manure, and the too prevalent practice with it—the ordure and wettest portion of the litter are thrown by barrowsful into one part of the heap, and the dry litter into another, instead of both being carefully intermixed, and are thus left in little aggers on the top, instead of being evenly spread in layers day after day.

Well may it be a trite proverb, when speaking of any thing badly prepared, that "you could chuck one like it together with a pitchfork," for the pitchfork, in the hands of an idle groom, chucks together such an ill-assorted heap as may well be a type of everything in which good materials are spoiled by bad handling. The volatile salts, so abundant in the animal rejections, are necessary to the reduction of a straw, and it is only by a proper construction of the heap that they can be retained in it, or duly dispersed through it. Constant neatness does not in the end create much additional trouble; but what if it did? Upon a moderate-sized farm, if a man were employed the half of every day throughout the year in doing nothing but attending to the manure, the expense would be insignificant compared with the increase of produce which would be the consequence. Every farmer reasons with himself upon this principle in other respects. Why does he go to the expense of boning? Why does he think nothing of distance, to procure the purest lime? Because the better the manure the more heart he puts into his land, which he knows will gratefully repay him for the trouble and cost. Yet this maxim he too frequently forgets, when he looks into his own yard, and passes by that permanent manure (which, more than any artificial manure, gives an enduring staple and stamina to the soil), withering, spoiling, and alternately dessicated or delayed out of its strength, merely from the want of just as much trouble as would keep it even and neat.

With respect to the *preparation* of manures, the simplest, and perhaps the only practice yet pursued is the interposition of lamina of fat earth, and other similar substances, between successive layers of manure, but it is evident, on the slightest reflection, that the admixture of the artificial with the natural manures offers a wide field for experiment—a subject which we must reserve for a future paper.—*London paper.*

CENTRALISED POLICE FOR THE WHOLE KINGDOM.

Subjoined is an abridgment of the report of the Commissioners appointed to enquire as to the best means of establishing an efficient constabulary force in the counties of England and Wales, in other words a Rural Police. We are aware that this subject is viewed with considerable jealousy by many persons, and there are not a few who are disposed to ascribe the majority of rural depredations to want of employment, and contend that the best and in fact the only substantial remedy for the evil would be to devise means for giving full occupation to the labourer. Were the point conceded, that the thefts and robberies which take place could be traced to actual necessity, resulting from want of employment; there can be no doubt that the proposed remedy would be the most proper and efficient. But if we look to the general disposition of the labourer who is inclined to work, and if we regard the particular character of the parties who are from time to time convicted of depredations and acts of violence, we shall find that in most cases the guilty parties are either idle well-known habitually bad characters or men of brutal and reckless dispositions. The time is gone by when any inroad upon the liberty of the subject might be apprehended from the establishment of a general police, we are therefore disposed to regard the proposed plan favourably.

The commissioners appointed to inquire as to the best means of establishing an efficient constabulary force in the counties of England and Wales, have just made their first report, which was issued last week. It is a voluminous affair, making, with the appendix, no less than 225 pages. The following extract, however, contains the essence, as it comprises the plan suggested by the commissioners, and a somewhat laboured vindication of the great principle upon which it is founded—the principle of centralization:

“We, therefore, propose—

“I. That as a primary remedy for the evils set forth, a paid constabulary force should be trained, appointed, and organised on the principles of management recognised by the legislature in the appointment of the new metropolitan police force.

“II. That for this purpose an application in writing, under the hands and seals of a majority of the justices assembled at any quarter sessions of the peace for the county, setting forth the insecurity of person and property, and the want of paid constables, the commissioners of police shall, with the approbation of the secretary of state for the home department, direct a sufficient number of constables and such officers as may, upon such examination as the said commissioners shall make or direct, be by them deemed adequate for the due protection of life or property within the county.

“III. The force shall be paid one-fourth from the Consolidated Fund and three-fourths from the county

rates, as a part of the general expenses of the whole county.

“IV. That the constables so appointed shall report their proceedings to the magistrates of the quarter and petty sessions where they are stationed.

“V. That the superintendants shall be subject to dismissal upon the representation of the justices of the peace in quarter sessions, and that the sergeants and constables shall be subject to dismissal upon the representation of the justices of the peace in petty sessions.

“VI. That the magistrates shall frame rules and regulations for the service of process and attendance at petty or quarter sessions of such force, which rules shall be submitted to the secretary of state, and, if approved by him, shall be binding.

“VII. That the commissioners shall frame rules and regulations for the general management of the police, which rules shall, on the approbation of the secretary of state, be binding.

“The principles embodied in our recommendations being based on extensive experience, we feel confident that, however they may for a time be impeded by adverse interests, these interests, and the prejudices engendered by them, will yield before the light of future experience, which will lead to the ultimate adoption of measures on the principles of those we propose. If one uniform and trained force be efficiently directed to the prevention or repression of crime we cannot doubt of success.

“We can find no solid grounds for the supposition often entertained that a large amount of crime is a necessary evil incidental to the present condition of society, and that the most ignorant and base of the community may defeat the exertions of a well-appointed agency instituted for the repression of their crimes.

“The appointment of a proper force for the prevention or repression of crimes has sometimes been viewed with apprehension on the supposition that such a force might be used to impair the political liberty of the subject.

“If we were to admit that a diminution, instead of an increase, of the political liberty of the subject, were the probable consequence of the establishment of an efficient constabulary force, we should nevertheless be prepared to show that the evils we have found in existence in some districts, and the abject subjection of the population to fears which may be termed a state of slavery, which the objectors would endure from a groundless fear of the loss of liberty, form a condition much worse in all respects than any condition that could be imposed by any government that could exist in the present state of society in this country. We do not believe that in this country any government could possibly exist which subjected the people to domiciliary attacks, and to have their houses broken open and plundered, and their lives endangered at night, or which caused a large proportion of the population to abstain from travelling singly after dark, for fear of being put in danger of their lives, and stripped of their property by armed men—which allowed its agents to pillage or maltreat the unfortunate people wrecked on the coasts, or which generally inflicted such evils as are now inflicted by upwards of 40,000 thieves, robbers, or marauding hordes of various descriptions, against whom the honest in almost every part of the country have been driven to associate for self-defence. Neither do we see any motives which could induce any government, in these times, to impose political restraints so oppressive or so mischievous on any industrious community, as we find imposed by illegal means on the manufacturing population of the city of Norwich, and other parts of the kingdom; nor do we believe that by any form of the abuse of the powers of a government, it could use any agency such as secret committees have employed in the manufacturing districts to coerce the honest and industrious, but peaceable, to purposes injurious to them, by actual murder, or the fear of life or maiming, or the threats of such fire and pillage as were displayed in the burning of the city of Bristol.

“The apprehensions expressed of danger to the liberty of the subject from the institution of a preventive police are usually supported by reference to institutions

having that name on the continent; but we believe it will be found that the notions prevalent as to the state and operations of such institutions are even more erroneous than those we have found prevalent on the state of the penal administration in this country. We believe it will be found that the police force in a neighbouring country, which has been referred to as a preventive police, is in no proper sense in sound theory or in actual practice preventive; and that it has had none of the chief effects popularly attributed to it. Although organised for political purposes, to the neglect, as we believe, of the main purposes of a preventive police—the protection of private individuals in the enjoyment of their rights against infractions by depredators or others—it has not saved the various governments which have depended on it, if any have; and in all large movements by the whole of the community, it has been disregarded or thrown aside as of no serious account. The trained force which we propose is of little more than one constable to 2,000 inhabitants;—a force three or four times more numerous than that we propose were absurd as a means of constraining the whole community to any course which they felt to be inimical to them. What such a force might do with the tacit consent of the community, and what we believe to be most important for the liberty of the subject it should do, is to enforce the laws for the suppression of conspiracies, riots, or dangerous violences, by which ignorant or fanatical, or rapacious minorities may seek their ends. Without the assent or aid of the community, that is to say, without information from the people, a police or constabulary force cannot perform properly even its ordinary duties.

“The safe course for maintaining the freedom of the subject appears to us to be, not to render the authorities impotent, but to make them strictly responsible for the use of the power with which they may be invested for the public service. The securities respecting which the greatest anxiety should be manifested, are the securities that the power which the legislature may confer for the general advantage shall be fully used. The great mass of evil indicated in our report is ascribable not to the abuse, but to the neglect and disuse of beneficial powers. The chief and proper objection, as we conceive, to the police forces abroad are, that they act on powers which are arbitrary; the force which we propose could only act on powers which are legal, and for which they would be responsible to the courts of law, and ultimately to the Parliament.

“What has been done partially in particular places may be done generally and more completely throughout the country, by the more efficient application of the like means. If a constabulary force were well appointed and trained on a uniform system, and were placed under trained and responsible direction for the whole country, it would, we are assured, soon enable all your Majesty's subjects to sleep under a feeling of security from midnight plunder and violence; it would give protection to the industrious classes in the enjoyment of property, and by enhancing its value create additional motives to industry and frugality; it would give freedom and security to travellers on the roads, and humane succour to natives, and hospitality to strangers thrown by shipwreck on our coasts; it would free the country from mendicancy and vagrancy, and the various evils that follow in their course; it would free the industry of the manufacturing labourers and increase the inducements to the investment of capital by protecting them from lawless violence; it would tend to secure the people from the alarms and dangers of riotous disturbances of the peace, by affording a powerful means of repressing them without the risk of military execution and bloodshed, without putting hostile parties in array against each other, without engendering animosities by arming neighbour to conflict with neighbour, and master with servant; all this, and much more beneficial service it might be made to render at an immediate expense of less than one-fourth of the sum recently saved by one amendment in local administration; or, as we feel confident, all these great objects may be accomplished with an ultimate saving

of the whole expense from upwards of 2,000,000*l.* of money, now chiefly expended on what have been proved before committees of the Houses of Parliament, and pronounced by them to be, ineffective or demoralising systems of punishment.

“All which we now humbly certify to your Majesty:

(Signed) (L.S.) “CHARLES SHAW LEFEVRE.

(L.S.) CHARLES ROWAN.

(L.S.) EDWIN CHADWICK.

“Whitehall-place, March 27, 1839.”

URINE AS MANURE.—The most extensive experiments with urine, as a fertilizer, with which I am acquainted, were those made by Mr. Harley, in the neighbourhood of Glasgow,* which he thus describes:—“Early in the season, part of the proprietor's farm, and some small fields contiguous to the cow-house, were sown with barley and grass-seeds; these were watered with cow urine, by means of an engine on the principle of a fire-engine. There were also used for that purpose hand-barrows with broad wheels, upon which barrels were placed, filled with urine. Under the barrels were placed conductors, about eight feet long, perforated with small holes. These barrows were easily wheeled along the rich soft ground, which would have been destroyed by horses and carts. The urine was carted to the field in large casks, from which it was carried, in stands resting on spokes, to the engine and barrows. The grass of the fields thus irrigated was cut five or six times a year, and though not very long in the blade, yet there was always a great weight of produce—indeed it was so rich and thick that it would have rotted unless cut often. The first cutting generally commenced about the middle of April, and was continued once a month. The grass was cut during the day when the weather was wet or moist, but when it was dry, it was cut late at night or early in the morning, and the land irrigated immediately after the grass was cut. Sir John Sinclair visited one of these fields which had been cut sixteen times in three years. Both urine and soap suds,” continues Mr. Harley, “were applied to the watering of fruit-trees. During the winter and the early part of the spring every tree was washed from the top to the root, which cleansed the bark, promoted a luxuriant growth, and made the trees bear well. There were about five acres of Garnet Hill, near Glasgow, planted with strawberries of assorted kinds, the ground was prepared as stated above, (dug, ploughed, and some rubbish added), and the strawberries were planted in rows which were trenched between every fall or winter. The field was divided into sections across the hill, and at the top or head of each of these sections there was a small trench made. The cow urine was carted along the top of the field, and by turning the stop-cock the urine ran into the trench at the top of the highest section; a small opening was made between every row of the strawberries to admit the urine which saturated the first section, the remainder then went into the second trench, &c., to the bottom. The highest sections were the poorest, but from their being more richly saturated with the liquid, they soon became as fertile as the lowest. The mode of irrigating was then changed, viz., a small cut was made from the top to the bottom of the field, and the urine made to run down that cut and fill each respective trench, allowing a larger quantity to the sections that stood most in need of it. This mode produced abundant crops of strawberries, very rich in quality, and, having a southern aspect, of most delicious flavour. The urine,” continues Mr. Harley, “destroyed worms and almost every kind of vermin:” and it was proved that when thrown by means of a garden engine over fruit-trees, that the urine was a complete destruction to the predatory insects with which they were infested, and that when applied to grass plats, it was equally pernicious to earth-worms, entirely preventing the earth-casts with which they are wont to annoy the gardener.

* Harleian Dairy System, 63.

THE CORN LAWS.

The advocates of a repeal of the corn laws decide the controversy between the manufacturers and agriculturists most satisfactorily to themselves and most triumphantly upon what they imagine to be incontrovertible facts. Were those, who indulge in these illusions, better acquainted with the nature of agriculture, they would discover their assumed facts not only to have no existence, but to be the very reverse of the reality. We will now notice a few of these errors.

It is universally presumed by those who are unacquainted with farming that the best soils are devoted to the plough. This is so far from being true, that such a system would be considered ruinous. The richest soils are retained as pasture. The third-rate and inferior are in general the arable. By skilful modes of management, by sewers and under-drainage, and by the introduction of manures suited to the peculiar soils; by lime or marl in some, by bone manure in others, land which would vary in value from 5s. to 10s. per acre, is made worth 25s.; and by warping near certain rivers, soils not worth 1s. are made cheap at a rent of 60s.

Again, it is also taken for granted, that if less of the land were arable there would be more produce of pasture; yet paradoxical as it may appear, in vast districts of this kingdom the greater is the quantity of land under the plough the greater will be the quantity of pasture-produce or its equivalent for sheep and cattle.

Let us take but as one example that extensive district called in Lincolnshire the Cliff, running from Winterton near the Humber north, to Grantham, Stamford, and still further south; extending in fact through the counties of Lincoln, Northampton, Oxford, Gloucester, Somerset, and Dorset, more than two hundred miles across the kingdom, and almost to the British Channel. A few years ago a large portion of the northern part, and probably much of the remainder was rabbit warren. Now the mode of cultivation in Lincolnshire is what is called the four course system. Fallow and cleansing till May, June, or July, when Swedish or other turnip seed is drilled in with bone dust. The produce is consumed by sheep, and that too in the winter season, when there would be no pasture; they fatten upon it, and the markets are thus supplied with fresh mutton; and, from similar though not precisely the same causes, with fresh beef at a period when our ancestors lived altogether upon salt fish, salt beef, and salt mutton, and nearly without vegetable food. Compare the consequent plagues and diseases of former times with the health and comfort of the present.

The next crop is barley, which, if the turnip crop shall have been successful, will probably be good. With the barley is sown clover; red if the land will bear it, otherwise white.

The next year come two crops of red clover, each more valuable than the same weight of hay; or white clover is growing, and pastured by sheep.

In autumn is sown the wheat for the next year's crop; as soon as it is cut the plough begins again the process of fallow and cleansing.

All this upon land which formerly fed rabbits only.

If the farmer should take land which has become foul from unskilful management, eight years will be required to bring it into proper condition, and fourteen to repay him. It is neither to his own interest nor to that of the consumer of bread that his contract should be for a shorter period. Large capitals are required for the management—10l. per acre is con-

sidered requisite for large portions of the country, or 5,000l. for a farm of 500 acres, one of but moderate extent, and frequently greatly exceeded, even fourfold. But since no one can foresee what so long a term of years may bring forth, most careful ought the legislature to be how it converts the contract from a benefit into an injury, by tampering with the laws.

I leave out of consideration the condition of those proprietors whose lands are encumbered by mortgages and provisions for younger children, as ever must be the case with real property. A lamentable instance of this nature, however, was mentioned in Parliament by Mr. Baring. An estate of the value of 300,000l. was left to two brothers. One took the whole, borrowed 150,000l. to pay off his brother, and mortgaged the estate for that sum: in consequence of the depression of agriculture the mortgagee foreclosed, the whole estate was absorbed, and the proprietor ruined.

Again, it is assumed that if corn were cheaper, so would be manufacturing labour. This is not by any means necessarily so. The contrary is not unfrequently true. When the mechanic can obtain the same amount of food with less labour he will not only not work so long, but he will insist upon a higher price for the work he does. Witness the universal combination and riots of the years 1824 and 1825. At present, while the farm labourer works twelve hours daily, large bodies of artisans keep Saint Monday, Saint Tuesday, and a half holiday on Saturday, which together with Sunday is just half the week. If bread, and still more, beer and corn spirits, were made cheaper, is it probable that their industry would be greater?

It is true that the wages of the agricultural labourer are greatly influenced by the price of corn. There is always a surplus of such labourers and they cannot combine. But if we are told that the superiority of the pay of the artisans and mechanics will attract persons to their employments, we answer that they will be repelled by combinations, by rules limiting who shall be employed, how many apprentices a master shall be permitted by his workmen to take, and, if necessary, by violent assaults, fire-arms, and burnings, from the effects of which neither the workman, the master, nor the magistrate are safe; witness the murders committed upon workmen by assassins, some of them hired, as at Dublin and Glasgow; upon the manufacturing masters at their own doors by Luddites at Nottingham, and subsequently in Lancashire; and upon the magistrate by the colliers in Northumberland.

Again, it is said that if we admit foreign corn the quantity of our manufactures will be increased, and the corn be obtained cheaper. Is this indeed so very certain? The foreign corn is to be paid for by our manufactures: on their importation into the foreign country the duties to be levied by every foreign government are most exorbitant. Place them at 50 per cent. only,—far below the reality as we shall presently see. Let the cost of the quarter of wheat abroad be no more than 35s.—with the English market open it would soon exceed that price—and let the freight and insurance be 4s. per quarter. With 35s. then for the wheat, 17s. 6d. for the duties at 50 per cent. on the manufactures, which are to pay for it, and 4s. for freight, the cost of the foreign wheat on its arrival in England would be 56s. 6d.

If then the price of home grown wheat should not exceed 56s. 6d. what would the manufacturer have gained by purchasing from the foreigner with his highly taxed commodities? Apparently nothing. But what would he have lost? The support of his coun-

trymen, the British and Irish farmers, who assist him to pay the taxes indispensable for the maintenance of the fleets and armies which defend his country, and of the courts which are occupied in the administration of justice—in short of whatever is necessary for the security and enjoyment and increase of his wealth at home and abroad, that in lieu of these advantages he might enrich the foreigner jealous of his prosperity, and ready at any period to engage in his destruction.

We have reasoned, however, on supposition, what then is the reality? The average of British wheat under the present corn laws has been for the last 10 years 56s. 3d., for the last 7 years 52s. 2d.—The freight and insurance from Hamburg is 3s., from Danzig 5s. per quarter, from Odessa 19s. 6d. has been paid this season for freight only.—The price of wheat at Danzig on the 11th of February last was not 35s. but 62s., on the 29th of March 61s.—Then for the duties, in Russia some of our woollen goods are prohibited, others at the present rates of exchange are charged with import duties varying from 11½d. to 3s. 4½d per lb. weight; linens from 1s. 5d. to 7s. 4d. per lb. Cotton goods from 8d. to 2s. 4½d. per lb.; white calicoes 1s. 5½d. or 156 per cent.; silks from 5s. 9d. to 9s. 7d.—In Austria the duties on British cottons, woollens, porcelain, and polished hardware, are not 50 but 60 per cent., on silks 20s. per lb. Nor is there a country in the world where our manufactures are not heavily burthened with duties.

Still our manufacturers are directing their views with great anxiety to the states of Germany. Let us inquire into the cost of but one of our English manufactures, and see what is doing on its importation into those countries which have adopted the Prussian tariff. To clean, card, and spin a pound of cotton into 40 hanks, a most extensive manufacture in Lancashire, costs there 5d., the duties exacted upon it in Prussia exceed 2½d. or 50 per cent. With this millstone round their necks, our manufacturers in 1837 exported to Prussia 4924 pounds weight only, valued at 502*l.* sterling.

Now let us go one step further, and let the pound of thread be wound, warped, dressed, and woven into calico: the additional cost of these processes is 6d., the additional tariff duty 13½d. or 225 per cent. Not a yard of it is or can be exported into the Prussian customs-union, except as a pattern or a curiosity.

We have not the less imported from abroad between the 5th of May, 1838, and the 11th of April, 1839, and almost entirely from Germany and Russia, as below.

	Quarters.
Wheat	2,009,996
Flour, 626,332 cwt., equal by our duties at 38½ gallons for 14 stone, to	215,301
Total	2,225,297
Admitted in addition since the 5th May from the stock then lying in bond	496,615

Total admission in less than 12 months 2,721,912

The prices of the 2,225,297 qrs. have varied from 28s. to 62s.: the duties therefore if paid in calico being 150 per cent., would vary from 42s. to 93s., increasing with the price and our necessities. When has the legislature of this kingdom extended such protection to its farmers?

But these duties have not yet been paid; the manufactures have not yet been exported; but, in lieu of them, gold and silver, which at an average price of 45s. per quarter on the 2,225,297 quarters, would amount to 5,006,918*l.* Since the commencement of these purchases, the bullion in the Bank of England has been declining, and is diminished by not less

than 4,500,000*l.* A part of the corn is still to be paid for, large additional importations are still taking place almost daily, the cost of which is to be paid hereafter, and the cause of the continuing pressure on that great establishment is manifest.

The last observation shall be on the varying scale of duties. A fixed duty has been tried, and no Ministry has dared to enforce it in periods of scarcity. Would any Government risk the unpopularity of levying a fixed duty of 10s. at this moment? For weeks past, by the present law it has been 1s. only. By the diminishing scale of duties the price of corn has been kept more equable. But any thing approaching to uniformity of price will never be attained so long as it shall please the Almighty, in his wisdom, to change the seasons, and scatter his benefits over the earth with an ever-varying hand.

April 15, 1839.

T. E. B.

RUTLAND.—The spring meeting of the Rutland Agricultural Society was held on Monday, March 25. The judges were Mr. Painter, of Burley, Mr. W. Sills, of Casthorpe, and Mr. Woods, of Teigh, who, after a strict scrutiny of the merits of the different animals, agreed upon the following award.—Class 16. For cart stallions that will attend at Uppingham and Oakham once a week during the season of 1839, a premium of 15 sovereigns was adjudged to Mr. T. Stokes, of Caldecott, for his five years old horse "Young England's Glory."—Class 17. For bulls under the usual restrictions, the first premium of 7 sovereigns was awarded to Mr. Baker, of Cottesmore, for his bull "Roderick Random:" the second premium of 3 sovereigns was awarded to Mr. Bagnal, of Irnham, for his three years and ten months old bull: the other competitors were generally commended, viz., Mr. Bosworth, of Greetham, Mr. Turner, of Market Overton, Mr. Morris, of Luffenham, and the Hon. H. Wilson, of Allextion.—Class 18. For boars under the usual restrictions, the premium of 5 sovereigns was awarded to Mr. Seaton, of Manton: the other competitors were generally commended, viz., Mr. Chapman, of Whitwell, Mr. Bromhead, of Belminsthorpe, Rev. H. Finch, of Oakham, Mr. Rudkin, of Langham Lodge, Hon. H. Wilson, of Allextion, Mr. Hayes, of Greetham, and Mr. Thos. Healy, of Ashwell, who exhibited a superior animal (but out of condition), which is proved by his having previously taken the first prize at the Grantham, Waltham, and Newark exhibitions.—The silver medal for the best pair of mares was awarded to Mr. Robert Smith, of Burley: the other competitors were Mr. Baker, of Cottesmore, a pair of Suffolk mares, and Mr. W. Baines, of Braunston, who also exhibited a yearling cart filly as extra stock, which was commended by the judges.—The general exhibition was considered to exceed any previous year, showing an increased interest in the exhibition of male animals, a subject worthy of remark, being calculated to improve the whole district.—A large party dined together at the Crown inn to celebrate the day, being of no small importance to the friends of agriculture, they having, in conjunction with the above exhibition, that day commenced the new agricultural hall.

FIFESHIRE AGRICULTURAL SOCIETY'S MEETING. — A wire fan gate, shown at the entrance of the field, mounted on its crooks, attracted considerable attention, and seemed to be generally approved of. A weight of 864 being hung on its extremity farthest from the hinge, and the gate swang to and fro, no deflection whatever was observable; and it was understood that it could have sustained two and a-half times this, or a ton weight suspended for any period without injury to its form. We believe there is not one maleable iron gate in ten but what will yield from two to six inches with one quarter of this. The total weight of the gate was about 80lbs., its length ten feet, and height four; its price not more than that of a common made gate, and just one-half of an iron one.

THE NATURE OF SOILS.

The soils of this country may be very conveniently divided into three principal classes, viz., the *siliceous* or sandy, the *aluminous* or clayey, and the *calcareous* or chalky, each of which may, of course, be modified by the presence of vegetable, animal, metallic, or other matters, and thus producing numerous varieties. I shall now proceed to offer a few remarks on some of the more important of these varieties. That different vegetables delight in different soils, is a fact that must be evident to the most common observer; and it is equally clear that we shall succeed more or less perfectly in the cultivation of plants in proportion to the degree of attention that is paid to the dictates of nature, as regards soil, climate, &c. The horticulturist is therefore frequently obliged to alter and modify his garden-soil, according to the various purposes for which it is intended. The alteration required may be either general or particular: thus, where the soil is naturally too stiff, too light, or too wet, it becomes necessary to have recourse to such operations as the peculiar nature of the soil may require for its improvement. * * * *

The different soils generally used for potting plants are—

LOAM.—This is generally procured of the best quality from commons or old pastures, taking only the top spit with the turf; that got from Sydenham Common is reckoned the best in the neighbourhood of London. To be good, it ought not naturally to crumble down too fine, but should bear to be chopped up rough with the spade.

PEAT.—This is of two kinds: 1st. That which is obtained from dry elevated moors, containing a large portion of sand, and is seldom more than a few inches deep: this is termed heath-mould, and is similar to that on Bagshot Heath. 2nd. That which is termed *peat* or *bog-earth*; it differs materially from the first, and is to be found in low swamps, where it is formed of decayed *sphagnum* and other vegetable matter. This, as dug out, is worthless; but after being frequently turned and sweetened by exposure to the influence of the weather, is equally as good as the heath-mould for potting, and is far superior for mixing with common garden-soil in the borders out of doors, being even better than manure for improving some sorts of stiff soils.

LEAF-MOULD.—This is obtained by collecting leaves of any sorts of trees (except the resinous kinds) in autumn, and laying them together to ferment and decay. They ought to be turned and well mixed several times during the summer; and will require three or four years to get thoroughly rotted so as to be fit for use. Of all trees the leaves of the common sycamore are perhaps the best for leaf-mould, being somewhat succulent, and consequently sooner disposed to decay. Oak-leaves are reckoned best to put into pits for giving a regular bottom heat, but certainly not for leaf-mould, as they are completely dried up before they fall.

ROTTED MANURE.—This is obtained by laying together a quantity of cow-dung, and turning it over occasionally until it be so completely rotted as to appear similar to black, rich mould.

SAND.—This may be either dug from a pit or obtained from the banks of a river; if intended for mixing with soils, it should be a coarse grit; but if wanted for striking cuttings, it should be somewhat finer, so that it may run compactly together, and thus exclude the air; it should not, however, become hard and crusted upon the surface. Sand of a whitish colour is most generally used, but the

colour is of no consequence, provided it be free from any admixture of iron. Such are the principal materials commonly used by gardeners for potting plants.

Peat and loam, with a portion of sand, is used for many kinds of Cape and New Holland plants: peat mixed with sand, for the different species of *Erica*, *Epacris*, and other plants from various countries having very fine fibrous roots: when bog-earth is used for this purpose instead of heath-mould, it requires a greater quantity of sand. Leaf-mould is sometimes used as a substitute for peat, or is occasionally mixed with it.

Rotted dung and leaf-mould mixed with loam is used for balsams, cockscombs, pelargoniums, and other strong-rooted plants. In whatever proportions they are mixed, the soil ought to be chopped up with the spade, but not sifted fine, unless for plants in small pots.

Particular attention should be paid to getting all the soils well sweetened by frequent turning before they are used, and also to using them rather dry. However good the soils may be, if these points be not attended to the plants will not grow kindly. When grubs, wireworms, and other insects which are injurious to roots, are found in soils, they may be readily destroyed by spreading the soil about two inches thick upon a walk or other place with a hard bottom, in dry weather in summer, and frequently turning it until it becomes tolerably dry; as no insect that burrows in the ground can survive long after it is deprived of moisture by exposure to the heat of the sun.

Drainers are also requisite for putting into the bottoms of the pots, without which many kinds of plants cannot be grown successfully. A supply may be readily obtained by saving all broken pots and breaking them into small pieces, varying from the size of peas to that of beans, according to the size of the pots for which they are wanted.—*Smith's Floral Cabinet.*

BEEES, SPRING FEEDING.—It is well in a little time to examine the remaining stock of food, for a good deal will be required for the increasing numbers. If needed some may be given, though less quantity than in autumn; three or four ounces of honey (made fluid and stirred with a little warm water) twice in a week are sufficient. In the absence of honey in the spring a substitute may be found in a pint of good sound ale with a pound of sugar, boiled together for a few minutes and well skimmed. Some add to this a little wine or spirits and a small portion of salt, which at any rate is not displeasing to bees. At this season it is well to give the food on a dry day and a little warmed. Many persons recommend feeding even the strong stocks, for it is certain that the bees are stimulated by the increased temperature to which it gives rise in the hive, and there can be no doubt of the importance of early breeding. But no feeding unless from absolute necessity should be resorted to till all chance of frost or snow is past, otherwise they are prematurely put in motion, and numbers perish unable to reach home. It has before been recommended to cover the pan on using it, this especially is requisite in a cold spring, for then all means should be used to prevent the escape of warmth from the brood. As respects the bees they may be more safely fed at the top of the hive than when compelled to descend below for this purpose, where they are subjected to the effects of a chilling temperature. The entrance of the hive should be gradually opened as the season advances, and room is required, contracting it if any attack by robbers takes place for this sometimes occurs.—*Taylor's Bee Keeper's Manual.*

ABORTION OR SLINKING CALF.

Cows that have long been afflicted with hoose, and that turning into consumption, are very subject to abortion. When consumption is established, and the cow is much wasted away, she will rarely retain her calf during her natural period.

This casualty often follows the sudden change from poor to luxuriant food. Cows that have been out and half-starved in the winter, and incautiously turned on rich pasture in the spring, are too apt to cast their calves from the undue general or local excitation that is set up; and a sudden change of rich pasture to a state of comparative starvation, will produce the same effect, but from an opposite cause. Hence it is, that when this disposition to abort first appears in a dairy, it is usually in a cow that has been lately purchased. Fright, from whatever cause, may produce abortion. There are singular cases on record, of whole herds of cows slinking their calves after being terrified by an unusually violent thunder storm; near Arlingham, eight heifers and cows out of twenty grazing near to a dog-kennel, aborted, in consequence of the frequent exposure of flesh, and the skinning of dead horses before them. The remainder were removed to a distant pasture and did well. Putrid smells have produced the same effects, and therefore the cattle in crowded cowhouses are not unfrequently subject to this mishap.

Besides these observable causes of abortion, there is the mysterious working of the atmosphere. There are certain seasons when abortion is strangely frequent and fatal; while, at other times it, in a manner, disappears for several successive years.

In 1789, all the cows in Beaulieu aborted. This, however, was traced to the long continuance of *wet* weather. In 1782, the cows near Granvilliers slinked their calves, and this was attributed to the excessive *heat* of the preceding summer.

The consequences of premature calving are frequently of a very serious nature. If the cow does not die, her recovery is much slower than after the natural parturition or calving. The coat continues rough and staring for a long time—the skin clings to the ribs—the appetite does not return, and the milk is dried up. Some internal chronic complaint now takes its rise, and the foundation is laid for consumption and death.

When the case is more favourable, the results are, nevertheless, often annoying.

If she should come in calf again during that season, it is very probable that about the same period as before, or a little later, she will again abort; or that when she becomes in calf the following year, the same fatality will attend her. Some close observers say that this disposition to cast her young one gradually ceases; that if she does miscarry, it is at a later and later period of pregnancy; and that in about three or four years she may be depended upon as a tolerable safe breeder; he however, would be exceedingly inattentive to his interests who kept a profitless beast so long.

The calf very rarely lives, and in the majority of cases, it is born dead or decayed. If there should appear any chance of saving it, it should be washed with warm water, carefully dried, and fed frequently with small quantities of new milk, mixed according to the apparent weakness of the animal, either with raw eggs, good gruel, or boiled sago; while the bowels should, if occasion requires, be opened by means of small doses of castor oil.

The treatment of abortion will differ little from that of a natural birth. If the farmer has once been tormented by this pest in his dairy, he should carefully watch the approaching symptoms of casting the calf, and as he perceives them, should remove the cow from the pasture to a comfortable cowhouse or shed, and be careful to keep her apart from any other cow that may be in calf. If the discharge is glairy but not offensive, he may hope that the calf is not dead; he will be assured of this by the motion of the fœtus or unborn calf, and then it is possible that the abortion may yet be avoided. He should hasten to bleed her, and that plentifully, in proportion to her age, size, condition, and the state of excitation in which he may find her; he should also give a dose of physic immediately after the bleeding. The physic beginning to operate, he should administer half a drachm of opium, and half an ounce of sweet spirit of nitre. Unless she is in a state of great debility, he should avoid above all things, the *comfortable drink*, which some persons so strangely recommend, and which the cow doctor will be almost sure to administer. He should allow nothing but gruel to eat, and he should keep his patient as quiet as he can. By these means he may occasionally delay the general or local irritation that precedes or causes the abortion, and the cow may yet go to her full time.

Should however, the discharge be fœtid, the natural conclusion will be that the calf is dead, and must be got rid of as speedily as possible. Bleeding may even then be requisite, if much fever exists; or perchance, the aforesaid comfortable drink may not be out of place. In other respects, the animal must be treated as if her natural time of calving had arrived.

Much may be done in the way of *preventing* the formation of this habit of abortion among the cows. *The dead calf must be got rid of immediately.* It should be buried deep, and far from the cow pasture, or cow-houses.*

Immediately after this, the cowhouse should be well whitewashed with quick lime, and plentifully sprinkled with a solution of chloride of lime.

The cow when beginning to recover, should be fattened and sold. This is the first, and the grand step towards the prevention of abortion, and he is unwise who does not immediately adopt it. It was the charm by means of which Chabert arrest-

* To shew the great power of cattle in discovering nauseous smells, the writer of this article cannot avoid mentioning a curious circumstance that was a short time since related to him by a gentleman of this county, whose veracity is undoubted.—A cow belonging to the above gentleman was found dead in a ditch of the pasture, and deeply buried there. About two years after this, a trough was fixed in the field near to this spot, and supplied by a small run of water; the cattle refused to drink, or even come near the water. On seeing this, the gentleman made his men dig about the place, to see if there was anything particular in the soil, when they discovered the dry bones of the animal that had two years previously been buried there. The bones were removed, two or three cart loads of the soil carried away, and replaced by fresh. After this, the cattle drank freely. Had the supply of water passed over the remains of the dead animal we could easily imagine the cause of this aversion, but this was not the case, as the water came in an open gutter above the trough, and the animal was buried below the trough and lower down the hill.

ed this plague, which for thirty years had devastated the farm at Tours. Should, however, the owner be reluctant to part with her, two months at least should be allowed to pass, before she is permitted to return to her companions.

Abortion having once occurred on the farm, the breeding cows should be carefully watched. Although well fed, they should not be allowed to get into too high condition. Unless they are decidedly poor and weak, they should be bled between the second and third months in pregnancy, and a mild dose of purging physic should be administered to each. If the first continues to reappear, the owner should most carefully examine how far any of the causes of abortion that have been mentioned in this paper, and the last may exist upon his farm and exert himself in carefully removing them.—*Carlisle Patriot.* B.B.

ON THE APPLICATION OF LIME.

Presuming that the operations of burning limestone in Ayrshire are on the eve of commencing for the season, and that the application of lime is, in an agricultural point of view, of much use to the country at large, I beg to offer a few cursory remarks on the subject. Being decidedly of opinion, that no county in Scotland is, on the whole, progressing so much in agricultural improvements, as Ayrshire is at the present day; notwithstanding that lime being there procured at an easy rate in general, or, more properly speaking, at a very low rate, when compared with many other counties, is sometimes used to disadvantage, and that more especially by spreading it upon the sward when the lime is in an effete state. It may, however, not be out of place to remark that tenants are, in several instances, bound by clauses in their leases, to lay certain quantities of lime upon the sward each time before the land is broken up by the plough from lea, but it is obvious to every practical farmer, that tacks are sometimes written out by persons utterly ignorant of the proper systems of farming, as well as of the intrinsic value of lands over which they unfortunately (for the good of the community) are placed as managers, and such factors may chuckle over the manner in which they may have duped a needy tenant, by raising his rent above par, or by imposing upon him some useless covenant, or arbitrary restriction, which only tend to enervate the farmer without proving beneficial to the landlord, who ultimately, and invariably becomes a loser, either by himself or his heirs.

But to return—lime can be most judiciously used when the land is well cleaned, preparatory to forming the drills for a turnip crop, or when it is undergoing a summer fallow after the root wheats are extirpated. The two last methods of application are much the cheapest, and by far the most effective in their operations. Where lands have for a long time been in a neglected and uncultivated state, and where they are overrun with coarse herbage, and have contracted an acidity unfavourable to vegetation, lime applied upon the sward may, all things considered, be advantageously used; but to spread it upon the sward where the soil admits of a summer fallow or the turnip husbandry, is the height of absurdity; for, in the former case, more or less is washed off the ground, if applied in a powdery state, while the remainder, from being exposed to all the vicissitudes of the season, soon becomes effete, and its stimulating effects are consequently deteriorated.

The good effects of lime can be obtained in some soils with much less quantities than in others, and that more particularly in light soils; and from various experiments, I have found that two carts of lime, when used in a powdery state, are productive of equal bene-

fit as three carts when used in an effete state; but although the caustic properties of lime conduce to bring the inert vegetable matter in the soil into proper action, agriculturists have been sometimes led into error by repeating the dose too often without the aid of other manures, the consequence of which is, that the land in place of becoming fertilized, is exhausted. The quantity of lime spread upon lands varies, according to soil and circumstances: in some instances 250 bushels are applied, while in others 50 bushels of shells may be considered as a fair quantity; but where lands have been neglected, it is much better to give a good dose at first than to spread small quantities at a time; and where the operation has been frequently repeated, lime may be most judiciously used by way of compost, in mixing it with earth, weeds, or other vegetable matter, and by proper attention to mixing and turning, its caustic effects are thereby corrected, and the result tends to excite the fertilizing qualities of the admixture. Lime may be used every nine or ten years upon land that is kept under a proper rotation of cropping, but it will never repay the expense of laying it upon worn-out lands, if such have been kept clean and heavily cropped, and such especially as had been previously limed. In conclusion,—from the improvements lately effected through drainage, lime can now be used much more efficaciously than formerly; for where it is applied to land saturated with water, it is, comparatively speaking, like throwing it into the sea, till the redundancy of moisture is removed.—*Ayr Advertiser.*

BANKING.

In England, where commerce is engaged in, and carried on, upon a scale of magnitude unknown in any other quarter of the world, and where capital is so immense, as frequently to occasion severe loss where profit was contemplated; it is astonishing, that banking should meet so little, or at least unseasonable attention from the Legislature. When an entirely new system springs up, it may be, that many of its defects will become apparent, only after experience has been had of its practical working, as is at present the case with regard to railways, but when repeated proofs of diseased action, have for a long time periodically shewn themselves, it surely is the bounden duty of those, to whom the conduct of the affairs of the nation is confided, to take all means in their power, to guard against a return of that monetary ailment, which however ultimately thrown off through the strength of constitution possessed by the patient, yet leaves behind many sad proofs of the violence of the disease. Whilst we deprecate any undue interference on the part of the Legislature, with the mode in which trade and commerce should be carried on, yet, when the property of every man, or at least, every one who is engaged in commercial transactions, is in a very great degree dependent upon the mode in which one particular branch of business is conducted, as we contend is the case with banking, we think a legitimate reason exists for prudent interference. Care however should be taken, that any regulations adopted, should not emanate from the crude speculations of theorists, but should be based upon the solid foundation of practical experience. Amongst bankers, as well as among the writers upon the subject of banking, it may be said that there now exists two great parties; the up-

holders of private banks, and the advocates for the general introduction of joint stock banks. Joint stock banks may abstractedly be said, to afford more security than private banks, inasmuch as there are a larger number of shareholders, whose property is liable to the demands of the customers of the bank. Experience has we think, shewn, that a joint stock bank is an engine of vastly increased powers, as compared with a private bank, and capable of producing an increased quantum of good, or an increased amount of mischief, in proportion as it is well or ill-managed. The principles upon which a private bank, or a joint stock bank should be conducted, are, as it seems to us precisely the same, and the same results will follow. Without, at present, taking into consideration the propriety of entrusting a single corporation with powers, the use of which exercise such an irresistible influence upon other banks of whatever denomination, we appeal with confidence, to the

history of the proceedings of private banks, and joint stock banks, to prove, that caution, prudence, and discretion, and incaution, imprudence, and indiscretion, will ever be followed with the same consequences in the one system, as in the other. So far as it is in the power of the Legislature, to guard against an abuse of the powers, with which a body of persons associating for the purpose of carrying on the business of banking, became by the very nature of their business invested, it is its bounden duty to do, and hence we trust the subject will yet meet the serious consideration of Parliament. In the mean time we submit to the perusal and consideration of our readers an article upon the subject, from a "Supplement to McCulloch's Dictionary of Commerce," just published, in which much valuable statistical information will be found. It possesses the accustomed well-known talent of the author, but we cannot say that we altogether coincide in his views.

(From the improved and greatly enlarged Supplement to Mr. McCulloch's Commercial Dictionary; containing many new and important articles, and bringing down the information in the work to January, 1839.)

London: Longman and Co.

BANK OF ENGLAND.—Account of the Issues, Securities, Bullion, and Surplus or Rest, of the Bank of England, as published in the Gazette, according to the Act 3 & 4 Will. IV., cap. 98.

Average in the Quarters ending.	Circulation.	Deposits.	Securities.	Bullion.	Surplus.
	£	£	£	£	£
1 January, 1834.....	18,216,000	13,101,000	23,596,000	9,948,000	2,207,000
1 April, —	19,097,000	14,011,000	25,970,000	9,431,000	2,293,000
1 July, —	18,895,000	15,096,000	27,593,000	8,695,000	2,261,000
23 September, —	19,126,000	14,754,000	28,691,000	7,695,000	2,506,000
18 December, —	18,304,000	12,256,000	26,362,000	6,720,000	2,522,000
15 January, 1835.....	18,012,000	12,585,000	26,390,000	6,741,000	2,534,000
7 April, —	18,591,000	11,289,000	16,323,000	6,329,000	2,677,000
30 June, —	18,315,000	10,954,000	25,678,000	6,219,000	2,628,000
22 September, —	18,240,000	13,230,000	27,888,000	6,261,000	2,679,000
15 December, —	17,821,000	17,729,000	31,048,000	6,626,000	2,624,000
12 January, 1836.....	17,262,000	19,169,000	31,954,000	7,076,000	2,599,000
5 April, —	18,063,000	14,751,000	27,927,000	7,801,000	2,914,000
1 July, —	17,899,000	13,810,000	27,153,000	7,362,000	2,806,000
22 September, —	18,147,000	14,118,000	29,406,000	5,719,000	2,860,000
15 December, —	17,361,000	13,330,000	28,971,000	4,545,000	2,825,000
10 January, 1837.....	17,422,000	14,354,000	30,365,000	4,287,000	2,876,000
7 February, —	17,868,000	14,230,000	31,085,000	4,032,000	3,019,000
7 March, —	18,178,000	13,260,000	30,579,000	4,048,000	3,189,000
4 April, —	18,432,000	11,192,000	28,843,000	4,071,000	3,263,000
2 May, —	18,480,000	10,472,000	28,017,000	4,190,000	3,255,000
30 May, —	18,419,000	10,422,000	27,572,000	4,423,000	3,154,000
27 June, —	18,202,000	10,424,000	26,932,000	4,750,000	3,056,000
25 July, —	18,261,000	10,672,000	26,727,000	5,226,000	3,020,000
22 August, —	18,462,000	11,005,000	26,717,000	5,754,000	3,004,000
19 September, —	18,814,000	11,093,000	26,605,000	6,303,000	3,001,000
17 October, —	18,716,000	10,501,000	25,316,000	6,856,000	2,955,000
14 November, —	18,344,000	10,242,000	23,985,000	7,432,000	2,831,000
14 December, —	17,998,000	10,195,000	22,727,000	8,172,000	2,706,000
9 January, 1838.....	17,900,000	10,992,000	22,606,000	8,895,000	2,609,000
5 February, —	18,206,000	11,266,000	22,569,000	9,543,000	2,640,000
6 March, —	18,600,000	11,535,000	22,792,000	10,015,000	2,672,000
3 April, —	18,987,000	11,262,000	22,833,000	10,126,000	2,705,000
1 May, —	19,084,000	11,006,000	22,768,000	10,002,000	2,680,000
29 May, —	19,018,000	10,786,000	22,648,000	9,806,000	2,650,000
26 June, —	19,047,000	10,426,000	22,534,000	9,722,000	2,783,000
24 July, —	19,286,000	10,424,000	22,601,000	9,746,000	2,640,000
21 August, —	19,481,000	10,298,000	22,747,000	9,746,000	2,714,000
18 September, —	19,665,000	10,040,000	22,846,000	9,615,000	2,756,000
16 October, —	19,359,000	9,327,000	22,015,000	9,437,000	2,765,000
16 November, —	18,900,000	8,949,000	21,171,000	9,339,000	2,661,000

BANK OF IRELAND.—Account showing the Circulation of the Bank of Ireland from 1823 to 1836, both inclusive.

Years.	Large Notes.	Small Notes.	Post Bills.	Total Average Circulation
	£	£	£	£
1823	1,827,700	1,383,600	1,859,100	5,070,500
1824	1,938,200	1,451,600	2,190,800	5,579,700
1825	1,969,300	1,677,500	2,662,500	6,309,300
1826	1,502,700	2,644,200	1,758,000	4,905,000
1827	1,460,300	1,491,800	1,411,300	4,363,600
1828	1,540,200	1,668,800	1,375,900	4,585,000
1829	1,615,200	1,459,300	1,362,700	4,437,300
1830	1,541,800	1,385,100	1,147,700	4,074,700
1831	1,488,600	1,399,300	1,025,000	3,913,000
1832	1,534,400	1,519,600	1,028,900	4,083,100
1833	1,600,600	1,472,300	943,400	4,016,500
1834	1,608,400	1,363,300	862,700	3,834,500
1835	1,623,400	1,249,800	763,600	3,636,900
1836	1,708,500	1,087,400	633,200	3,429,300

BANKS, JOINT STOCK.—*Increase of.*—Since the publication of the 2d edition of the *Dictionary*, in 1834, an extraordinary increase has taken place in the number of joint stock banks, both in Great Britain and in Ireland. It appears from the official return, dated the 4th of July, 1833 (*Dict.*, p. 99.), that there were then 34 joint stock banks established in England and Wales; but it appears from the subjoined account, dated January, 1838, that the number of joint stock banks had, in the interval, been very nearly trebled, or had increased to 111; and it is deserving of notice, that a very large proportion of this rapid increase took place during the year 1836. The progress of the system has been as follows:—

In 1826 there were			In 1832 there were		
registered	..	3	registered	..	7
1827	..	4	1833	..	9
1828	..	0	1834	..	10
1829	..	7	1835	..	9
1830	..	1	1836	..	47
1831	..	9	1837	..	5

We should, however, form a very inadequate idea of the extension of the joint stock banking system, if we measured it merely by the increase in the number of banks, as stated above. Many of the older banks, and even of those recently established, have from 20 to 40 or more branches, or subordinate establishments; and, as these carry on all sorts of banking business, and are frequently very far removed from the head office, and from each other, they should really be regarded as so many separate banks, so that the number of the latter is incomparably greater than, at first sight, it may appear to be.

Proceedings of Joint Stock Banks.—We regret, however, to have to state that the solidity of the system seems by no means to correspond with its power of extension. The banks seem, speaking generally, to be infinitely more anxious to increase their business, than to provide for that security which ought to be the paramount consideration. Hence the inordinate multiplication of their branches, and hence, also, the extent to which many of them have carried the abusive and dangerous practice of *rediscounting*. Nearly four-fifths of the joint stock banks issue notes; and the subjoined account shows that their issues, which amounted to 1,783,689*l.* on the 27th of September, 1834, amounted to 3,969,121*l.* on the 24th of September, 1836. This, no doubt, is an extraordinary increase, more especially when contrasted with the issues of the Bank of England, which were reduced more than a million during the same interval: and must have had a powerful effect in producing that redundancy of the currency, and drain upon the Bank for gold, that took place in 1836. We should, however, fall into the greatest imaginable error, if we measured the influence of the joint stock banks upon the currency by the mere amount of their notes in circulation. These really constitute but a very small portion of their obli-

gations. Most of them have been in the habit of trading, not on their own capital, or on the deposits made with them; but on credit obtained in the metropolis and elsewhere. Instead of retaining the bills, and other securities they have discounted, in their coffers till they are paid, many banks have been in the habit of immediately forwarding them to London to be rediscounted at a lower rate of interest. This practice has been carried to an extent that would not readily be imagined by any one not pretty well acquainted with the circumstances. But, though recourse may properly enough be had to assistance of this sort on extraordinary occasions, no bank can be justly said to be established on sound, or to be conducted on safe, principles, that trusts habitually to such accommodation. It is always at the mercy of circumstances over which it has no control, and is not really more secure than a house of cards. While pecuniary accommodation may be had readily in the metropolis, the system goes on smoothly; but should prices begin to give way, or credit sustain any sort of shock, distrust takes the place of confidence, and the usual supplies are no longer to be had. The provincial banks being in consequence disabled from making their ordinary advances to their customers, the latter are necessarily involved in difficulties that are frequently as injurious to the banks as to themselves. Such has hitherto been the invariable result of the abuse of banking, or of the granting of undue facilities for the obtaining of credit; and, instead of being lessened by the formation of joint stock banks, they seem to have materially increased the chances of such disasters in future. The circumstances connected with the difficulties in which the Northern and Central Bank of England, and some other joint stock banks, have been involved, sufficiently illustrate what has now been stated; but they are too well known to our readers to require to be recapitulated here.

But there are other and, if possible, still more suspicious circumstances connected with the existing joint stock banking system. The shares in the greater number of the recently formed and projected banks are very small, few being above 50*l.*, while others are only 25*l.*, and some not more than 10*l.*, and even 5*l.*! Generally, too, it is understood, or rather it is distinctly set forth in the prospectus, that not more than 5, 10, or 20 per cent. of these shares is to be called for; so that an individual who has 20*s.* or 30*s.* to spare may become a shareholder in a bank. And, owing to a practice, or rather a flagrant abuse, introduced into the management of various banks, by which they make large advances or discounts on the credit of the stock held by the shareholders, not a few individuals in doubtful, or even desperate, circumstances, take shares in them in the view of obtaining loans and bolstering up their credit! The great danger arising from such banks is obvious; and were one of them to stop payment, it is plain, even though the claims on it should be ultimately made good, that they could be so only at the cost, and, perhaps, ruin of such of its proprietors as had abstained from the abusive practices resorted to by others. It may well, indeed, excite astonishment, that any one who can really afford to make a *bonâ fide* purchase of shares in a bank should be foolishly enough to embark in such concerns.

Report of Committee of 1836.—A knowledge of the circumstances now stated, and of the sort of agency by which certain joint stock banks had been established*, having been pretty generally diffused, a secret committee was appointed by the House of Commons, in 1836, to inquire into the operation of the act 7 Geo. IV. cap. 46., permitting the establishment of joint stock banks; and whether it was expedient to make any alteration in its provisions. The report of this committee, and portions of the evidence taken before it, have since been published, and confirm all the conclusions of those who had contended that the existing system required material amendment. The committee state that,—

“Subject to the local restrictions imposed for the pro-

* For instances of this, see *Edinburgh Review*, No. 123, art. 6, and the account of the Norwich Bank, in the evidence taken by the Secret Committee.

tection of the privileges of the Bank of England, it is open to any number of persons to form a company for joint stock banking, whether for the purpose of deposit, or of issue, or of both.

"1. The law imposes on the joint stock banks no preliminary obligation beyond the payment of a license duty, and the registration of the names of shareholders at the Stamp Office.

"2. The law does not require that the deed of settlement shall be considered or revised by any competent authority whatever; and no precaution is taken to enforce the insertion in such deeds of clauses the most obvious and necessary.

"3. The law does not impose any restrictions upon the amount of nominal capital. This will be found to vary from 5,000,000*l.* to 100,000*l.*; and in one instance an unlimited power is reserved of issuing shares to any extent.

"4. The law does not impose any obligation that the whole or any certain amount of shares shall be subscribed for before banking operations commence. In many instances banks commence their business before one-half of the shares are subscribed for, and 10,000, 20,000, and 30,000 shares are reserved to be issued at the discretion of the directors.

"5. The law does not enforce any rule with respect to the nominal amount of shares. These will be found to vary from 1,000*l.* to 5*l.* The effects of this variation are strongly stated in the evidence.

"6. The law does not enforce any rule with respect to the amount of capital paid up before the commencement of business. This will be found to vary from 105*l.* to 5*l.*

"7. The law does not provide for any publication of the liabilities and assets of these banks, nor does it enforce the communication of any balance-sheet to the proprietors at large.

"8. The law does not impose any restrictions by which care shall be taken that the dividends are paid out of banking profits only, and that bad or doubtful debts are first written off.

"9. The law does not prohibit purchases, sales, and speculative traffic on the part of these companies in their own stock, nor advances to be made on the credit of their own shares.

"10. The law does not provide that the guarantee fund shall be kept apart and invested in government or other securities.

"11. The law does not limit the number of branches or the distance of such branches from the central bank.

"12. The law is not sufficiently stringent to insure to the public that the names registered at the Stamp Office are the names of persons *bonâ fide* proprietors, who have signed the deed of settlement, and who are responsible to the public.

"13. The provisions of the law appear inadequate, or, at least, are disregarded, so far as they impose upon banks the obligation of making their notes payable at the places of issue.

"All these separate questions appear to your committee deserving of the most serious consideration, with a view to the future stability of the banks throughout the United Kingdom, the maintenance of commercial credit, and the preservation of the currency in a sound state."

Remedial Measures that should be adopted.—We do not, however, think that it would be at all necessary, in providing for a secure system of joint stock banking, to make any regulations with respect to many of the points noticed by the committee as to which the law is silent. At present every partner in a joint stock bank is liable to the public for the whole debts of the firm; and this may be truly said to be the saving principle of the system, and without which it would be an unmixed evil. No individual should, however, by merely withdrawing from a joint stock concern, get rid of his liabilities in connection with it. To prevent fraud, and to ensure due caution, these ought to continue for a period of three years at least after he has publicly withdrawn his name. The public, too, are clearly entitled to know the partners in joint stock associations; that is, to be informed who the individuals are with whom they are dealing, and

who are responsible to them. But, unluckily, no effective means are taken for supplying the public with this necessary information, or, consequently, of properly discriminating between one establishment and another. The act of 1833 (3 & 4 Will. IV. c. 83.) directed that an account of the places where they carry on business, and of the names and residences of the partners, should be quarterly transmitted to the Stamp Office. But doubts have been entertained as to the correctness of these returns, and comparatively little use has been, or indeed, can be, made of them. The accounts of the names and residences of the proprietors are not published; but are carefully secluded from the public eye in the repositories of Somerset House! It is true that these lists may be seen by those who choose to apply at the office, for a small fee, and that certified copies may be procured at no great expense. But few know that such returns exist; and fewer still have the opportunity, or think of availing themselves of them as sources of information. To render them of any real utility, they should be brought under the public eye, by being hung up in the offices of the banks to which they refer, and periodically published in the newspapers of the places where they carry on business. By this means the public would know exactly to whom they had to look, and would act accordingly. They would not be deceived, as they are liable to be at present, by supposing that, because a bank has a number of partners, some of them must be opulent and trustworthy. They would know the precise state of the fact; and if it were seen, from the quarterly returns, that opulent and intelligent individuals were withdrawing from a bank, every one would be put on his guard, and would naturally conclude that the parties had very sufficient reasons for quitting the concern. Thus far publicity may be made effectual, and would be of the very greatest importance. Neither is it possible to allege a single plausible objection to this proposal. It interferes in no degree, nor in any way, with the proceedings of the parties: all that it does is to declare who and what they are; and to this degree of publicity no honest man will ever object.

But we have great doubts whether it be possible to carry publicity further than this. The committee state that "the law does not provide for any publication of the liabilities and assets of these banks, nor does it enforce the publication of any balance-sheet to the proprietors at large;" and it has been proposed to compel the periodical publication of a statement of this sort: but it is very questionable whether any such publication would not be a great deal worse than useless. It is not proposed that commissioners should be appointed to inspect the accounts of the different banks, and to see that the returns are accurate: this would be too inquisitorial, too cumbrous, and too costly a plan to be thought of for a moment. There would be nothing for it, in fact, but to trust entirely to the *honour* of the parties! Hence, in all cases in which a disclosure would be really useful, the publication of an account of assets and liabilities would afford the means of deceiving the public, and of representing a bankrupt concern as being in a prosperous condition. Supposing, however, that the parties were, in all instances, perfectly honest, still the publication of a balance-sheet would be good for nothing. Every one knows how sanguine people are in relation to their own affairs; and that debts and obligations that other parties would hardly reckon worth any thing, are estimated by them as if they were so much bullion. But, independently of this, the futility of the thing is obvious. A bank with a capital of 100,000*l.* discounts bills and other obligations to the extent perhaps, of 300,000*l.* or 400,000*l.*; the fact that it has discounted them shews that it believes these bills and obligations to be good; and they will, consequently, be reckoned among its assets. But should a revulsion take place, or any circumstance occur to shake credit, these bills may not be worth 100,000*l.*; and those who have dealt with the bank, on the hypothesis of its having capital and assets more than enough to meet all its obligations, will find, to their cost, that it is not possessed of a single shilling, but is, on the contrary, some 200,000*l.* or 300,000*l.* worse than nothing!

The committee seem to think that some regulation

should be enacted, providing that a certain portion of its capital should be paid up before a bank begins business. But the better way would be to prohibit all advertising of *nominal* capital. This, in fact, is a mere device by which to entrap and delude the public. A bank is announced with a capital of 1,000,000*l.*, 2,000,000*l.*, or 3,000,000*l.*; and a great number of people, perhaps the majority, immediately conclude that there can be no risk in dealing with an establishment possessed of so great an amount of property. But what is the fact? The capital advertised is nominal merely; not more perhaps than a tenth or a fifth part of it has been received into the coffers of the bank, and we have nothing better than the statement of the bank proprietors, or their agents, that they will pay up the remainder, if necessary; of which necessity they of course are to be the only judges! Practically this is neither more nor less than a fraud upon the public; it is a contrivance for making 10,000*l.* pass in the public estimation for 100,000*l.*; and for procuring the same degree of credit to its holders. This, however, is not all. Where is the security that if a greater amount of capital were really required it would be forthcoming? The notion that the bulk of the shareholders in many, we are pretty sure we might safely say most, of the joint stock banks now in existence could pay up the full amount of their shares, is too ludicrous to deserve notice. We might as well call upon a man worth 5*l.* to extinguish a debt of 500*l.*

There can be no doubt, therefore, unless it be meant to affirm that deception and fallacious statements are indispensable to the success of joint stock banking schemes, that all advertising of nominal capital should be put an end to; and that no association should be allowed to represent its capital as exceeding the sum actually paid up by the proprietors. But though this would obviate one source of fraud and deception, there would still be abundant means of practising on the credulity of the public at the disposal of parties inclined to use them. Admit that a bank has a capital of 500,000*l.* actually received into its coffers, what is to hinder the directors from lending out the whole of this sum, or even more, to themselves or to partners in the bank? or supposing them not to do this, who can tell whether the entire capital, or some considerable part of it, be not wholly engulfed in ruinous speculations? It is indeed alleged, and truly too, that this could not happen with any "respectable" bank, that "gentlemen of character" would not lend themselves to such transactions! Unluckily, however, there are no decisive marks or tests by which the public can, *à priori*, say what is or what is not a "respectable" bank, or who is, or is not a "gentleman of character;" and it is not a little hazardous in such matters to indulge in speculative remarks. Hence it is that all banks are held to be respectable, that is, solvent, till the event proves the contrary; and that all gentlemen connected with banks are held to be "men of character," paragons, in fact, of honour, honesty, and even intelligence, till their fraud or ignorance has involved hundreds or thousands in bankruptcy and ruin.

We do not state these circumstances in order to raise any prejudice against joint stock banks or other associations, for they apply equally to one, or to a small number, of individuals; but we state them to show the folly of placing any reliance on statements as to the capital of any bank, or the character of its managers. Such statements may be either true or false; but, as the public cannot tell which, they are plainly good for nothing. The only real security is to be found, if it exist at all, in the names of the partners responsible for the debts and obligations of the bank. The number of such partners is a very inferior consideration. There cannot, in truth, be a greater error than to suppose that because a bank has a great number of partners, its security may be safely depended upon. A single individual worth 100,000*l.* is an incomparably better security than fifty individuals worth 2,000*l.* each; and a hundred individuals worth 1,000*l.* would hardly be any security at all; at least for a sum of 10,000*l.* or 20,000*l.* A private bank with *six*, may be a safer place of deposit than a joint stock bank with *six hundred* partners. Every thing depends upon the *available wealth* of those responsible for the debts of the concern; and hence the propriety and justice,

whether the firm consist of one or of many partners, of publicly declaring and specifying their names.

We are decidedly hostile to a proposition we have heard mooted, and which seems to be countenanced by the committee on joint stock banks, for obliging all banks to establish a guarantee fund; that is, for obliging them to accumulate a *portion of their profits* as a reserve stock. But where is the security that such reserve would be always deducted from profits? The truth is, that bankrupt and fraudulent concerns, and none else, would gain by such a regulation; inasmuch as it would enable them, by appearing to be prosperous, the better to deceive the public, and to blind them as to the real state of their affairs. It is a good deal worse than absurd to induce the public to depend on guarantees that cannot be enforced, and which, consequently, must be good for nothing. The knowledge of who the partners are in a bank, and their unlimited responsibility, are the only securities that, speaking generally, are worth a pinch of snuff. If these cannot protect the public from fraud or loss, nothing else will; and the question will come to be, not whether the system should be reformed, but whether it should be abated as an incurable nuisance. On this ground also, we should be disposed to dissent from any attempt to prevent, by legislative enactment, the making of loans upon the credit of bank stock. We do not question the advantage of such a regulation, provided it were honestly carried into effect. But it is useless to say that, whenever the parties were disposed to defeat such a course, it would be quite inoperative.

We have already noticed the extraordinary multiplication of branch banks all over the country; and it is not very difficult to discover why banks of issue, at least, are so very anxious about the establishment of these out-works. They are bound, it seems, by the present law, to pay their notes *only at the parent establishment*; so that, by issuing them at a branch bank, perhaps a hundred miles distant from the head bank, the chances are ten to one they will continue for a much longer period in circulation, and that they will consequently be able to carry on business with a much less amount of capital, than if they were, as they ought to be, obliged to pay their notes at the branches as well as at the principal office. It is obvious, indeed, that the convertibility of the paper, even of first class banks, into either cash or Bank of England notes, is, at present exceedingly imperfect; and that very great facilities are afforded for getting the worst class of notes into circulation, and for keeping them afloat, even after their quality may be suspected. This defect in the law ought, undoubtedly, to be amended, by obliging all banks that issue notes to pay them indifferently at any of their offices. But we incline to think that parliament might go further than this; and that it should enact that no branch be established, whether for the issue of notes, or otherwise, beyond a certain distance (say fifty miles) from the head office.

Several of the points recapitulated by the committee, as to which the law is silent, respect the rights and interests of the partners in joint stock banks, in relation to each other, and not as between them and the public. But it is always a very difficult matter to interfere to dictate the footing on which parties in any undertaking should stand among themselves. Much should, in such cases, be left to the judgment of the parties; and public regulations, if enforced at all, should only go to prevent obvious and acknowledged abuse: the parties may, in most cases, be safely left to take care of themselves. The protection of the public interest is the paramount consideration; and we do not well know what can be done to effect this, in the case, at least, of such banks as do not issue notes, other than the making known who their partners are.

We have elsewhere (*Dict.* p. 81.) said, that if the Bank of England could, with safety to herself, pay interest on deposits, as is done by the Scotch banks, it would be of the greatest service to the public. The joint stock banks formed, or being formed in the city, are undertaking this function, and are offering a fair rate of interest on deposits. If they succeed in this, they will confer no slight advantage on the community, and will become as it were so many savings' banks for

the middle classes, and for the rich as well as the poor. But the responsibilities this system will bring along with it are neither few nor small. A bank with a numerous body of partners of undoubted wealth and integrity, that should give 2 per cent. interest on all deposits of 10*l.* and upwards, how short soever the period for which the deposit might remain in the bank, would, there is little doubt, speedily have ample funds at its disposal. In quiet and prosperous times, the system would work exceedingly well; and the bank and the public would be vastly well pleased with each other. But when the cycle of prosperity has gone by, and the cycle of adversity has begun; when the waters are out, and the winds begin to blow; it is doubtful whether either the bank or its depositors may feel quite at ease. The former will probably raise the rate of interest; but it is doubtful whether that will have the wished-for effect. Should the exchange set against us, and the Bank of England be forced to narrow her issues, and should bankruptcy and a feeling of insecurity begin to prevail, as they have done hitherto on all similar occasions, a run for deposits may, and most probably will, be made upon the bank; and in such a case her situation, however well she may have been managed, will be most critical. She will be compelled to dispose of, or pledge securities in a market where they may be all but unsalable; and it will be impossible for her suddenly to pull up in discounting, without exposing herself to the imminent danger of extra loss, by bringing on the stoppage of those who have been accustomed to trust to her for loans.

It will be said, perhaps, that this is all imaginary, and that nothing of the sort ever occurs in Scotland! But it would really be about as much to the purpose to say that nothing of the sort ever occurs in Japan. London is the pivot on which the foreign exchanges turn, and when they become depressed, many of the London depositors will do what the Scotch depositors never so much as dreamed of; that is, they will demand their deposits, convert them into gold, and either send this gold abroad, or get a profit from those who will. From this source of annoyance and loss the Scotch banks are perfectly free; and this, by exhausting the resources of the London banks, and subjecting the weaker ones to difficulties, occasions discredit, and, in the end, runs or panics. Nothing, therefore, can be more perfectly futile than to contend that, because this system has proved profitable for the Scotch banks, it will also be profitable for the London banks. We do not presume to affirm that such will not, and we hope that it may be, the case. But it would be rather illogical to affirm, because wheat succeeds remarkably well in the vale of Gloucester, that it will succeed equally well on the Welsh mountains.

The joint stock banks may, if they do not already, endeavour to obviate some of the difficulties now stated, by declining to pay interest on deposits unless they lie for a certain time, or by stipulating for a certain notice before they are paid. The first condition would, however, be of little effect in the evil day; but, either the one condition or the other is altogether subversive of what is meant by granting interest on deposits, and goes far to make the announcements to that effect little better than a hoax upon the public. All, or nearly all, the existing banks, are banks of deposit in this sense of the word; that is, they give interest on deposits of a certain amount, provided they be not called for till after the lapse of an agreed on period, and that the depositors give them no farther trouble. But it is doubtful whether money deposited at 2 per cent. under such conditions, and still more under an engagement to give notice of demand, be as well laid out as if it were deposited with the Bank of England, or any other bank of undoubted solidity, at no interest, but payable on demand. Most men of business would, we believe, prefer the latter. Nobody, indeed, not wishing to get into difficulties, would be disposed to deal with any bank that required notice of demand; and it is questionable whether any such stipulation should be sanctioned by law.

AMERICAN BANKS.—The system of banking in the United States has recently attracted a great deal of attention in this country. The Bank of the United States was incorporated by Congress in 1816, with a capital of 35,000,000 dollars, for the issue of notes and the transacting of ordinary banking business. Its head office was in Philadelphia, but it had branches that carried on an extensive business in most considerable towns of the Union. The charter was limited to twenty years' duration; and the question, whether it should be renewed, was debated with extraordinary vehemence in all parts of America. The late president, General Jackson, was violently opposed to the reincorporation of the bank, and resented a bill for that purpose, that had been sanctioned by the other two branches of the legislature. A majority of Congress having come round to the president's views, the charter was allowed to expire. It has since, however, received a new charter from the state of Pennsylvania. But this merely enables it to carry on business in that State; though it may obtain, and has, in fact, already obtained, leave from some of the other states to establish branches within their limits. It is, however, no longer a national or government bank; but it is now, as formerly, the first moneyed institution of the new world, and in this respect, indeed, is second only to the Bank of England.

We cannot help thinking that the American government acted throughout the whole of this affair on the most erroneous views. Banking in America is, if possible, in a still worse condition than in England; and there can hardly be a doubt that the establishment of the Bank of the United States was of signal service to the republic, by affording a currency of undoubted solidity, readily accepted in all parts of the Union, and by its operating as a salutary check on the conduct of other banks. General Jackson, and the party of which he was the head, have, or affect to have, a great horror of paper-money. But it would be practising too much on the patience of our readers, were we to endeavour to prove by argument the great utility, not to say necessity, of a paper currency, of some sort or other, to all great commercial countries like the United States. To suppose that it should be altogether dispensed with is as absurd as it would be to suppose that they should dispense with their improved roads and carriages. A wise statesman should not attempt to suppress what is indispensable, but should exert himself to obviate its defects, and to make it as suitable as it can be made to the objects in view. This, however, General Jackson and his party have not done. On the contrary, they declared war against the only unexceptionable bank of the Union, and to injure it gave full scope to the rest. Hence, instead of obviating any one of the gross defects inherent in the existing banking system, the proceedings of General Jackson aggravated and multiplied them in common degree; and it is now infected with every vice that it seems possible can belong to banking.

The American banks are all joint-stock associations. But instead of the partners being liable, as in England, for the whole amount of the debts of the bank, they are in general liable only for the amount of their shares, or for some fixed multiple thereof. It is needless to dwell on the temptation to commit fraud held out by this system, which has not a single countervailing advantage to recommend it. The worthlessness of the plan on which the banks were founded was evinced by the fact that, between 1811 and the 1st of May, 1830, no fewer than a hundred and sixty-five banks became altogether bankrupt, many of them paying only an insignificant dividend; and this exclusive of a much greater number that stopped for a while, and afterwards resumed payments. The wide-spread mischief resulting from such a state of things has led to the devising of various complicated schemes for insuring the stability and prudent management of banks; but, as they all involve regulations which it is impossible to enforce, they are practically worse than useless. In Massachusetts, for example, it is provided that no bank for the issue of notes can go into operation in any way until at least half its capital stock be paid in gold and silver into the bank, and be actually existing in its coffers, and seen in them by in-

spectors appointed for that purpose; and the cashier of every bank is bound to make specific returns once a year of its debts and assets, on being required to do so by the secretary of state. But our readers need hardly be told that these elaborately contrived regulations are really good for nothing, unless it be to afford an easy mode of cheating and defrauding the public. Instances have occurred of banks having borrowed an amount of dollars equal to half their capital for a single day, and of such dollars having been examined by the inspectors appointed for that purpose, and reported by them, and sworn by a majority of the directors, to be the first instalment paid by the stockholders of the bank, and intended to remain in it.* We do not of course imagine that such disgraceful instances can be of common occurrence; but what is to be thought of a system which permits a company for the issue of paper-money, founded on such an abominable fraud, to enter on business with a sort of public attestation of its respectability? The publicity, too, to which the American banks are subject is injurious rather than otherwise. Those who are so disposed may easily manufacture such returns as they think most suitable to their views; and the more respectable banks endeavour, for a month or two previously to the period when they have to make their returns, to increase the amount of bullion in their coffers by temporary loans, and all manner of devices. The whole system is, in fact, bottomed on the most vicious principles. But it is unnecessary, after what occurred in 1836 and 1837, to insist further upon the gross and glaring defects of American banking. Perhaps no instance is to be found in the history of commerce of such a wanton over-issue of paper as took place in the United States in 1835 and 1836. The result is known to every

body: the revulsion to which this over-issue necessarily led having, in May, 1837, compelled every bank in the Union, without, we believe, a single exception, to stop payments.

Owing to the privilege claimed by the different States, and exercised without interruption from the Revolution downwards, it is, we fear, impossible to effect the suppression of local paper in America, or to establish a paper currency which should at all times vary in amount and value, as if it were metallic. But the States have it in their power to do which is next best: they may compel all banks which issue notes to give security for their issues. This, though it would not prevent destructive oscillations in the amount and value of the currency, would, at all events, prevent those ruinous and ever-recurring stoppages and bankruptcies of the issuers of paper-money, that render the American banking system one of the severest scourges to which any people was ever subjected. Common sense and experience alike demonstrate the inefficacy of all the regulations enacted by the American legislature to prevent the abuse of banking. It is in vain for them to lay it down that the issues shall never exceed a certain proportion of the capital of the bank, and so forth. Such regulations are all very well, provided the banks choose to respect them; but there are no means whatever of insuring their observance; and their only effect is to make the public look for protection and security to what is altogether impotent and worthless for any good purpose. The suppression of local issues is indispensable in order to make a paper, currency what it ought to be. If, however, this be impossible in America, there is nothing left but to take security from the issuers of notes. All schemes for the improvement of banks, by making regulations as to the proportion of their issues, and advances to their bullion, capital, &c., are downright delusion and quackery.

* Gouge's Paper-Money and Banking in the United States.

Table showing the Number and Capital of the various Banks existing in the United States at the under-mentioned Periods. (See Letter of the Secretary of the Treasury, January, 1838.)

States,	1st January, 1811.		1st January, 1820.		1st January, 1830.		December, 1837.		
	No. of Banks.	Capital estimated.	No. of Banks.	Capital estimated.	No. of Banks.	Capital estimated.	No. of Banks.	No. of Branches.	Capital authorised.
		Dollars.		Dollars.		Dollars.			Dollars.
Maine.....	6	1,250,000	15	1,654,900	18	2,050,000	59	..	5,535,000
New Hampshire...	8	815,250	10	1,005,276	18	1,791,670	27	..	2,835,508
Vermont.....	0	....	1	44,955	10	432,625	20	..	2,200,000
Massachusetts...	15	6,292,144	28	10,485,700	66	20,420,000	138	..	40,839,000
Rhode Island.....	13	1,917,000	30	2,982,026	47	6,118,397	64	..	18,300,000
Connecticut.....	5	1,933,000	8	3,689,337	13	4,485,177	31	3	8,665,607
New York.....	8	7,522,760	33	18,988,774	37	20,083,353	98	2	37,305,460
Pennsylvania.....	4	6,153,150	36	14,681,780	33	14,610,333	50	18	59,944,435
New Jersey.....	3	739,740	14	2,130,949	18	2,017,009	33	..	10,875,000
Delaware.....	0	....	6	974,906	5	830,000	4	4	4,410,000
Maryland.....	6	4,895,202	14	6,708,131	13	6,250,495	28	3	29,175,000
West of Colombia..	4	2,341,395	13	5,525,319	9	3,875,794	7	..	3,500,000
Virginia.....	1	1,500,600	4	5,212,192	4	5,571,100	6	18	8,531,200
North Carolina....	3	1,576,600	3	2,964,887	3	3,195,000	3	7	3,000,000
South Carolina.....	4	3,475,000	5	4,475,000	5	4,631,000	10	2	22,956,518
Georgia.....	1	210,000	4	3,401,510	9	4,203,029	20	2	11,790,573
Florida.....	0	....	0	....	1	75,000	11	..	13,800,000
Alabama.....	0	....	3	469,112	2	643,503	3	4	14,451,969
Louisiana.....	1	754,000	4	2,597,420	4	5,665,980	16	49	54,554,000
Mississippi.....	0	....	1	900,000	1	950,000	14	22	39,400,000
Tennessee.....	1	100,000	8	2,119,782	1	737,817	4	4	6,600,000
Kentucky.....	1	240,460	42	8,807,431	0	....	4	10	9,246,640
Arkansas.....	0	....	0	....	0	....	2	2	3,500,000
Missouri.....	0	....	1	250,000	0	....	1	3	5,000,000
Illinois.....	0	....	2	140,910	0	....	2	6	2,800,000
Indiana.....	0	....	2	202,857	0	....	1	10	1,980,000
Ohio.....	4	855,000	20	1,797,463	11	1,454,386	32	1	12,900,000
Michigan.....	0	....	0	....	1	100,000	17	3	7,500,000
Wisconsin Territory	0	....	0	....	0	....	4	..	1,600,000
Savings Banks....	88	42,610,601	307	102,210,611	329	110,102,268	709	173	440,195,710
United States Bank	1	10,000,000	1	35,000,000	1	35,000,000			
Total.....	89	52,610,601	308	137,210,611	330	145,192,268	709	173	440,195,710

Account of the Average Dividends paid by the Banks of the State of New York on their paid-up Capitals, in 1831, 1832, 1833, and 1834. (*Report of Bank Commissioners to the Legislature of New York, Jan. 22, 1835.*)

	Capital.	Amount of Dividends.	Rate per cent.
	Dollars.	Dollars.	
1831.			
9 country banks, capitals of 100,000 dollars, and under 9 ditto capitals over 100,000 dollars, and not over 200,000 dollars	880,000	30,500	9'14
10 ditto capitals over 200,000 dollars.....	1,395,000	117,180	8'40
	3,750,000	330,000	8'80
Total.....	6,025,000	527,680	8'75
1832.			
17 country banks, 1st class, as above	1,680,000	158,500	9'43
11 do. do. 2d class	1,745,000	163,030	9'34
11 do. do. 3d class	4,160,600	362,568	8'69
13 New York city banks	11,311,200	695,165	6'14
Total.....	18,905,800	1,379,263	7'29
1833.			
9 country banks, 1st class	1,880,000	197,500	10'50
14 do. do. 2d class.....	2,215,000	206,080	9'30
11 do. do. 3d class.....	4,169,600	444,126	10'65
14 New York city banks	12,111,200	760,787	6'28
Total.....	20,375,800	1,608,463	7'89
1834.			
20 country banks, 1st class.....	1,980,000	206,000	10'43
21 do. do. 2d class.....	3,420,000	290,818	8'50
13 do. do. 3d class.....	4,719,600	409,492	8'67
15 New York city banks	13,611,200	1,028,462	7'55
Total.....	23,730,800	1,934,772	7'815

ON BONE MANURE.

Some few months ago there appeared a statement by the Duke of Portland on "the Use and Abuse of Bone Manure." His Grace observed that the crops of barley and seeds, especially the latter, were very inferior on land manured with bones, compared with farm-yard manure; and an attentive observation of the effects of bones, during an experience of fifteen years, has, in every instance, led me to the same conclusion. When bones were introduced on his Grace's estate in Northumberland, I was engaged in his Grace's service in the practical charge of a farm of upwards of 600 arable acres, of which about 100 were turnip-land of weak and inferior quality. A crushing-mill was erected on the estate, driven by the wheel of a grinding-mill, and the bones were principally bought from the tan-yards, at a price per carcase. They were crushed, carted to the field, and sown immediately. In every case they exceeded the best prepared farm-yard dung in producing a crop of turnips, but wholly failed in supporting an equal subsequent fertility on land and fields of equal quality. In order to remedy this defect, an application of short dung or compost was resorted to in the spring, and this dressing was effectual. The quantity of turnip-land on that farm being small in proportion to the wheat clays, and the quantity of straw to be reduced in the yards being very great, there existed a necessity of pulling off the whole turnip crop to be consumed by cattle, the tops, in some cases, excepted; and there was no evidence if the dressing left by sheep eating the turnips on the boned land would have supplied the deficiency; we may presume it would: and this requisite application, in order to support an equal fertility on land, must form an item to be added to the expense of bones in a fair comparison with putrescent manures. Still, however, this detracts nothing from the great value

of bones as an auxiliary manure, because, from the lightness of carriage, they can be brought to situations where no putrescent manure can be got, and sheep can be driven to any situation, in order to afford the top dressing, if it be only possible to secure the great requisite, the turnips themselves. It appears that our auxiliary manures, however quick and efficacious they may be for one crop, will not support subsequent fertility; they do not add to the staple of the soil, and it is in this respect I presume, that farm-yard manure beats every other yet brought into competition with it. His Grace has not stated if the turnips were partly or wholly eaten by sheep on the field, or wholly carried off. If they were wholly so, in either case, the result might have been the same.

It is a fact well known to farmers, and not yet sufficiently explained by scientific men, that the same plants fail in producing a crop when sown in near and frequent repetitions, and that of all others, clovers are most apt to fail. On inferior lands, and where the soil has been worn out and exhausted by constant ploughing and cropping, clovers have been often sown, and have not produced a single plant on fields of many acres. It has been long held as a firm and fixed opinion by the farmers in Northumberland and in the turnip districts in Scotland, that their turnip lands, and those of inferior quality especially, must be pastured two or three years, that the land may acquire consolidation by time, and rain, and the tread of animals. This fact is particularly remarked and pointed out by Messrs. Bailey and Culley in the survey of Northumberland, upwards of forty years ago, as being one great and leading cause of the success of turnip and sheep farming in that country. In the southern counties, on the contrary, constant ploughing and cropping is practised; and this great difference in the treatment of the land is one great reason of the frequent success and

failure of the turnip crops in North and South Britain. The writers of the survey above quoted, in their concluding remarks, observe, that the turnip crop never succeeded "unless the seed had the freshness of a lea clod to vegetate in."

This great advantage is lost in our southern counties by the absurd custom of keeping "old turf," and the consequent necessity of constantly ploughing and cropping the other part of the farm. An opinion may be hazarded that the failure of seeds might arise from the severe course of cropping; but even this argument does not in any way invalidate his Grace's observation, because the land on which the manure was used was similarly treated; and when this is the case, and all circumstances being as nearly as possible alike, the conclusion is just and reasonable, that the inferiority of the crops must arise from the less efficacious nature of the manure itself. I have often seen a failure of seeds follow the exact line of demarcation between the application of farm-yard dung and auxiliary manures from London, and where the crop of wheat showed no difference. The fields on which his Grace made the observations had been manured twenty years constantly with bones. The application of farm-yard dung was a "change," and the earth may like a change of food as well as of plants.

I have always had excellent seeds on boned land eaten on wholly by sheep; but this does not say they would not have been better on any part of the field manured with farm-yard dung. On the farm above mentioned, the turnip land was constantly cropped, as turnips, barley, tares, rye, &c., from a necessity to procure as much green food as possible on a poor clay farm; and bones and putrescent manures were used in alternation each return of the turnip-crop as much as possible. My opinion, then, from experience is, that bones will not support subsequent fertility equally with farm-yard dung; but, from the lightness of carriage and the scarcity of the former article, and from bones and sheep being alike suited to the same soils, they form one of the most invaluable discoveries in modern agriculture.

Chemistry tells us that the component parts of bones are, earthy salts, fat, gelatine, and cartilage. The earthy salts are, 1st, Phosphate of lime, which constitutes the greater part of the whole; 2nd, Carbonate of lime; 3rd, Phosphate of magnesia; 4th, Sulphate of lime. Bones are now boiled in many places, and deprived of the fatty matter, and after being crushed, it is now very generally thought necessary to bring them into a state of fermentation, by mixing with ashes, soil, lime, or water.

All the bones I used in Northumberland were "fresh," and in every instance the effects were quick and great. No fermentation was produced, as they were carried from the mill to the field in bags, and sown immediately. In 1835, boiled bones, unfermented, produced as good a crop as usual, on a poor soil in Surrey. In 1836, they failed on a better soil. It appears to me that the state of the atmosphere, at the time of sowing, exerts great influence, for we see a considerable difference betwixt the sowings of following days. In 1836, a failure was pretty general over the kingdom—the first I ever witnessed, and at the time of sowing, and long after, there prevailed a cold, ungenial, drizzling state of the atmosphere. On this subject, as on many others, different persons will arrive at different results, arising from different circumstances. The great excellence of bones has been supposed to consist in giving ready support to the germination of the young turnip plant, and in pushing it more quickly beyond the reach of the fly; and yet we find opinions diametrically opposite, for

in the Farmers' Magazine for July, 1838, page 30, we find it stated that farmers find it advantageous to apply farm-yard manure with the bones to nourish the plant in its first stages, until the decomposition of the bone commences. This is wholly opposed to our general opinion, and shows how very different views can be entertained on any point, and all derived from practice, and in many instances from science.

In sowing bones, it is essential they be well covered with fresh soil, where the fermentation of the bone and the germination of the seed may be quickly promoted. No method I have seen, suits better than opening drills at 26 inches interval, without one furrow of the common plough, which working deeply in the soil well loosened, throws up a high ridge for the coulter of the bone-sower to split and deposit the bones and soil to cover them. In some cases, the soil does not fall in behind the coulters so as to cover the bones, owing to a stiffish and cloddy surface, and they are often left bare. In these cases I applied the double mould-board plough to pass between the drills, and to throw fresh soil over the bones, and the turnip-seed is deposited by a common two-drill sower.

The covering of the bones with fresh soil is most essential, in order that the turnip plants may derive immediate support, the turnip seed coulters, by being bent backwards, would throw the seed among the bones, and they would consequently germinate among their food; for in our present knowledge of the turnip-fly, we know of no better remedy than by every means of encouragement to push the plant beyond that stage in which the fly will attack it. When bones were first introduced, they were wholly confined to white turnips, not being thought to possess sufficient strength to raise Swedes; but this curious opinion soon vanished, for in less than five seasons they were applied to Swedes, and succeeded equally as with other turnips. I mention this circumstance to show the opinions and prejudices that will arise on any subject from mere conjecture.—*London Paper.*

SAGACITY OF THE DOG.—There used formerly to be as many dogs as men at the kirk of Twouldsmuir, Peeblesshire, on account of the difficulty which the farmers and shepherds of that pastoral district had in preventing canine attendants from following them. The dogs in general behaved pretty well, and lay below the seats: still noisy quarrels among them sometimes took place, and on these occasions the minister had to order the beadle to turn out the disturbers of the peace; with these exceptions, they kept in tolerably good order till the congregation was going to disperse. From long attendance at church they knew when this breaking up was to take place. The signal for uproar was the rising of the minister in the pulpit to pronounce the blessing; as soon as he did so, they used to rush pell-mell to the door, barking and screeching for joy to be let loose, and therefore not a word could be heard. At length the minister, honest man, bethought himself of a plan to get quit of these disturbances. He told the members of the congregation that it would be better for them all to keep their seats till the parting benediction was over, and then they would rise and walk leisurely out. This was tried, and succeeded remarkably well. However it happened one day, that the minister of the parish was absent, and a stranger was in the pulpit, who, when he rose to pronounce the blessing after the last psalm, was surprised to see the congregation sitting, which is against all rule and custom. At last an old grey-haired shepherd called out to him—"Oh just go on, Sir, go on; we are only sitting a wee bit, to cheat the dowgs, but when you have done we'll all rise, and go out quietly."—*The Naturalist.*

THE VETERINARY SCIENCE AND AGRICULTURE.

We entertained a hope that ere this we should have been enabled to announce that some satisfactory arrangement had been made between the Veterinary College and the English Agricultural Society, relative to a proposal made some time since, of enlarging the system of education at the College, so as to embrace the study of the diseases of the other domesticated animals as well as the horse. It is passing strange that "a subject," as well expressed by Mr. Youatt at a meeting of the Veterinary Medical Association, "intimately connected with the growth and value of animals, in numerical proportion exceeding the horse twenty times over, and in aggregate value many times superior to him," should have been so long neglected. We are happy to state, however, that a communication has again been commenced with the Governors of the College, and we have no doubt that the result will be satisfactory. Mr. Youatt, amongst the other improvements which he has laboured to promote in the profession of which he is a member, has been indefatigable in endeavouring to awaken the members of that profession to the importance of extending the sphere of their labours to the study of the diseases of those animals, which may, in a twofold sense, be designated the farmer's stock.

It will be seen by an advertisement in this number, that the members of the veterinary profession are sensible of the merits of Mr. Youatt, and are about to give substantial proof of that sense by presenting him with some testimonial of their approbation. We consider that the agriculturists are much indebted to him for his exertions in calling the attention of his brethren in the profession to maladies, the unrestrained ravages of which have, in many cases, and in a very short space of time, blasted the hopes and annihilated the exertions of years. We trust, therefore, that before the subscription is closed, there will be found in the list, the names of many agriculturists, not only for the purpose of evincing their gratitude for the past, but also of encouraging others to persevere in labouring to carry out an object of the highest importance to the practical farmer.

ON THE NATURE AND MANAGEMENT OF LIVE STOCK.

To form a correct opinion of cattle, it is necessary to be thoroughly conversant with the proper shape of all species of animals, destined either for breed or for slaughter.—There are certain fundamental and indispensable points, the harbingers of health, strength, and condition, which bountiful nature has made common to every species. And description and definition, with a few unimportant deviations, will clearly elucidate the true form, indifferently, of oxen, sheep, and swine. To point out all the favourite forms of each class, would take up too much space: I shall, consequently, only submit the following marks of goodness, which I am of opinion, have so much the sanction of common sense, that no connoisseur would call the beast fully furnished with them, a bad one; or, at least, an ill-formed one. Uniform symmetry, and an equal proportion of length, depth, and thickness, a fine head, eyes full and lively, chest expanded and deep, legs rather

short, straight and even back, and loins wide, girth deep, quarters muscular, and flesh down to the hips. In order to suffice those who may but lightly consider the matter, I will simply point out the many disadvantages arising from breeding or purchasing stock, of inferior or ill shape:—*Imprimis*, inequality of parts clearly indicates weakness and imperfection; on the other hand, equal proportion is the surest sign of strength and power in the animal to produce and carry the greatest quantity of flesh. I am aware, that the majority of your readers will say, that for fattening, it matters little how awkward the beasts may be, provided they are strong and healthy. The assertion, in one sense, may be true—but it is no less true, that attention to form is amply repaid, by increase of product. For instance, animals that are short and round, feed quick, yet come short in weight, and, in general, produce nothing but fat. In vain, the butcher may seek for that solidity, and depth of flesh, in some of the prime parts; for it cannot be found, but in a well-proportioned carcass. On the other hand, view the lengthy, lank, flat-sided beast, and what follows? weak constitution, inaptitude to fatten, and a longer period required before ready for sale—and, when sold, no credit is given to the feeder. Thus, whatever may be the weight or size of the animal, there are three desirable objects to be kept in view: a proportional union of length, depth, and thickness, which invariably insures the inherent and desirable qualities of each. It is a well-known fact, that animals materially differ from the variations of soil and climate, but they are always to be found of fairest form, and finest flesh in those parts where due attention is paid to their rearing and feeding. Those best suited for districts, where the keep is not very luxuriant, are middle sized, of equal proportion, but they will thrive considerably beyond expectation, if allowed rich pasture. The large heavy cattle are suited for the low lands; in some cases, however, they are apt to overtop the mark, and as they increase in size, to decrease in flavour and nutritive power. Let it ever be kept in view, that large animals should never be kept on poor or short pastures. But the stock-manager, who feeds his store cattle at home, during winter, not leaving them on bad pasturage, and poachy land, exposed to the severity of winter, and stall-feeds, in proportion to the quantity of land he holds, will be amply repaid, and have the highly and laudable privilege of keeping a first-rate description of stock, in any part of this country. Having stated my opinion on the size of cattle, generally, I feel consistent to generalize something more—for instance, circumstances may require a diversity of size. I believe, we may venture to assert, that the middle-sized animal, perfectly shaped, is most likely to combine the good qualities of each, and to add to the accommodation of the public, as well as private interest. The business of keeping live-stock naturally comes under three denominations:—breeding, store-feeding, and fattening, and the selecting of these, in a great measure, depends on local circumstances. Where a preference is presented, the matter ought to be duly considered, and proved by experience, before brought into operation. A man possessed of little sensibility for the brute creation, and who exclaims against the trouble attending their rearing, had much better purchase than breed. But I am perfectly satisfied, that judicious breeding will invariably pay. The reasons are obvious—first, the breeder has all the profit; secondly, the prospect of an improved breed; and thirdly, a final and decided advantage in fattening; for it is generally admitted, that cattle finish quicker and better on the ground

where they were bred. It is altogether useless to breed for the purpose of half-storing, as I regret to state is too often practised—certainly, Providence supplies them, in the summer season, with abundance of grass, which their merciless owners refuse them, in the winter season, when most required. Indeed, it often appears to me strange, why men will be so blind to their own interests. Winter after winter, their loss, by mortality, is very serious, not to mention their waste of condition, and the state of their cattle, the ensuing spring, so many moving skeletons—and, though last, not least, the incalculable loss sustained by wasting so much valuable manure. But I may be told, circumstances won't permit of any other method. The answer or assertion might pass current for sound sense two centuries back, but, in the present state of agricultural science, it appears as it should, truly ridiculous. If those would-be celebrated stock-masters would only condescend to make a trial, on a limited scale, for three successive years in the cultivation of green crops, for the winter support of cattle; house a sufficient number to consume the crops raised; compare their condition the following spring, with those left exposed to the severity of the winter; value the hand improved by the additional quantity of manure made, and I will venture to stake my reputation, as an agriculturist, that the advantages derived will be so numerous, and so manifest, that, in despite of prejudice, they will ultimately confess, that our modern practice is preferable to their system, sedulously handed down from father to son.—*Correspondent of The Irish Farmer's and Gardener's Magazine.*

A GLOSSARY OF GEOLOGICAL TERMS.*

BY GIBBEON A. MANTELL, LL.D., F.R.S.

ALLUVIUM, water worn materials.
ALUMINUM, metallic base of clay.
AMORPHOUS, shapeless.
AMYGDALOID, cellular volcanic rock, the cavities of which are filled with other substances.
ANTHRACITE, stone or cannel coal.
ANTHRACOTHERIUM, an extinct animal, allied to Palæotheria, found in Anthracite.
AUGITE, a mineral found in many volcanic rocks.
Basalt, ancient larva, composed of Augite and Felspar, frequently columnar.
BASIN, a depression of, or concavity in Strata.
BELEMNITE, the bone of an animal allied to the cuttle fish.
BITUMEN, mineral pitch or tar.
BLENDE, sulphuret of zinc, occurring in primary and secondary rocks.
BRECCIA, conglomerate of pebbles or fragmented rocks.
CALC SINTER, deposition from thermal springs, charged with carbonate of lime.
CALCAIRE GROSSIER, a tertiary limestone.
CALCIUM, metallic base of lime.
CARBON, the elementary substance of charcoal and the diamond.
CARBONATE OF LIME, lime and carbonic acid.
CARBONIFEROUS, belonging to coal.

CHALCEDONY, a species of silix, named from Chalcedon, a city of Asia, near which it is found in great abundance.
CHERT, a silicious mineral allied to flint and chalcedony.
CHOANITE, a zoophyte of the chalk.*
CIRRUS, fossil shell of the chalk.*
CORNBRASH, a coarse shelly limestone.
CONCHOIDAL, shelly.
CONFORMABLE, applied to parallel strata lying upon each other.
CONGLOMERATE, fragments cemented together.
CRAG, a tertiary deposit; from a provincial term used in Norfolk and Suffolk to denote gravel.
CRATER, the vent of a volcano.
CRINOIDEA, lily-shaped animals.
CRYSTALS, symmetrical forms assumed by mineral substances.
CYATHIFORM, cup-shaped.
DELTA, alluvial deposits formed by rivers.
DENUDATION, strata exposed by the action of water.
DETRITUS, disintegrated materials of rocks.
DILUVIUM, a term formerly employed to designate ancient alluvial deposits.
DIP, the inclination of strata.
DYKE, an intrusion of melted matter into rents or fissures of solid rocks.
EARTH'S CRUST, that portion of the solid surface of the earth which is accessible to human observation.
ENCRINITE, a genus of Crinoidea.
EOCENE, the dawn of the present epoch; the early tertiary.
ESCARPMENT, the steep cliff of a ridge of land.
EXUVIÆ, organic remains.
FAULT, interruption of the continuity of strata with displacement.
FELSPAR, a mineral which enters into the composition of many primary rocks.
FORMATION, group, series, system; terms applied to any class of rocks presumed to have been formed during one geological epoch.
GALT, a provincial term applied to the blue marl of the chalk formation.
GNEISS, a primary rock, allied to granite.
GRANITE, a primary rock, composed of Mica, Quartz, and Felspar.
GREENSAND (OR SHANKLIN SAND), the lowermost strata of the chalk formation.
GREENSTONE, a trap rock.
GREYWACKE, a transition rock; a conglomerate indurated by heat.
GRIT, coarse-grained calciferous sandstone.
GYPNUM, sulphate of lime.
IGUANODON, extinct colossal lizard, having teeth like those of the iguana.
IMBRICATED, laid one over the other like scales.
INOCERAMUS, a bivalve shell of the chalk, having a fibrous structure.†
KIMMERIDGE CLAY, a blue clay of the oolite.
LACUSTRINE, belonging to a lake.
LAMELLATED, covered with thin plates or scales.
LAMINÆ, the thin layers of which a stratum is composed.
LAMINATED, strata formed of very thin layers.
LAPILLI, volcanic ashes, in which minute globular concretions prevail.
LIAS, a provincial term, applied to a group of

* From the *Wonders of Geology*. This list is not intended as a complete geological glossary; but it will be found to serve the general purposes of the student very well.—ED.

* See Dr. Mantell's *Geology of the South-East of England*, p. 125.—ED.

† See *Geol. of the S. E. of England*, p. 127.—ED.

strata, situated between the oolite and the new red sandstone.
LIGNITE, carbonised wood.
LITHODOMI, mollusca which perforate stone.
LITHOLOGICAL, the stony character of a mineral mass.
LITHOPHYTES, stony plants, a term applied to corals.
LOESS, an alluvial tertiary deposit on the banks of the Rhine.
LOPHIODON, a fossil animal, allied to the taper, so named from the eminences on the teeth.
MAMMILLATED, studded with mammillæ, or rounded protuberances.
MARL, a mixture of clay and lime.
MARSUPIE, a genus of crinoidea of the chalk.
MATRIX, the substance in which a fossil is embedded.
MEANDRINA, a genus of corals, with meandering cells, as the brainstone coral.
MEGALOSAURUS, gigantic lizard, an extinct saurian allied to the monitor.
MEGALONYX, an extinct quadruped, allied to the sloth.
METEORITES, mineral masses which fall from the atmosphere.
MEGATHERIUM, an extinct gigantic quadruped, allied to the sloth.
MICA, a simple mineral, one of the component parts of granite.
MIOCENE, middle tertiary series.
MULTILOCULAR, many chambered shells, as the nautilus.
MUSCHELKALK, a limestone of the red-sandstone formation.
NEW RED SANDSTONE, a group of strata between the magnesian limestone and the lias.
NODULE, a rounded mineral mass as a flint.
NUMMULITE, an internal multilocular shell.
OBSIDIAN, a glassy lava.
OLD RED SANDSTONE, a group of strata lying between the carboniferous beds and the silurian system.
Oolite, a limestone group composed of an aggregation of spheroidal grain.
ORGANIC REMAINS, the relics of animals and plants.
ORTHOCERATITE, a strait, fossil multilocular shell.
Ossicular, small bones.
PALEOTHERIUM, an extinct quadruped, allied to the Tapir.
PEPERINO, a volcanic aggregate.
PETROLEUM, mineral oil.
PISOLITE, minerals having a structure, resembling peas agglutinated together.
PLUSTIC CLAY, a tertiary deposit.
PLESIOSAURUS, an extinct marine animal, allied to the Lizard.
PLIOCENE, more recent, modern tertiary.
POLYPARIA, corals.
PORPHYRY, a species of ancient lava.
PRODUCTA, a genus of fossil bivalve marine shells, found in the lower secondary rocks, and allied to Terebratula.
PTERODACTYLES, a genus of extinct winged reptiles.
PUMICE, a light spongy lava.
PYRITES, sulphuret of iron.
QUARTZ, a mineral composed of pure silex.
SAURIAN, a division of the Lizard-family.
SCAPHITE, an extinct genus of Cephalopoda of a boat-like form.
SCORIÆ, volcanic cinders.
SEDIMENTARY, deposited by water.

SEPTARIA, nodular masses of clay, having crevices filled with spar.
SHALE, slaty clay.
SILEX, flint.
SILICA, the base of flint.
SILT, fluviatile deposits of mud, &c.
SPIRIFERA, an extinct genus of bivalve shells.
STALACTITE, pendant masses of carbonate of lime.
STALAGMITE, calcareous concretions formed on the floors of caverns by the dripping from stalactites.
STELLULAR, having star-like markings.
STRATUM, a layer of any deposit.
SYENITE, a species of granite in which Hornblende supplies the place of Mica.
TERTIARY, applied to formations or strata newer than the chalk.
TRACHYTE, lava composed chiefly of Felspar.
TRAP ROCKS, ancient volcanic rocks, the name of which is derived from a Swedish word, Trappa, a stair.
TRILOBITE, an extinct family of Crustacea, the body being divided into three lobes, whence the name.
TUFF, earthy volcanic rock.
TUFA, a calcareous precipitate from water.
TURRILITE, a spiral multilocular shell of the chalk.
UNCONFORMABLE, applied to strata lying in a different plane from those on which they rest.
VEINS, fissures in rocks, filled up by mineral substances.

THE GLOBE MANGEL WURZEL.

Claypits, Earls Colne, 4th Month, 3rd, 1839.

RESPECTED FRIEND,—It is with reluctance I advert to the subject of globe mangel wurzel again, having so frequently trespassed on thy indulgence without any claim to that privilege, but the fact of an experiment upon an extensive scale having been made and accurately proved by the land steward of E. G. Barnard, at Gosfield Hall, in this county, between it and the long red, and which has very recently come to my knowledge, I am induced to lay it before the public as it serves to confirm my former statements in its favour, and may tend to induce some to give it a trial which will not be regretted. From the limited quantity of its seed which was for sale in 1838, the knowledge of its advantages is still much confined. That existing doubts of its capability to produce as much weight as the long may be removed in the present season, I will give verbatim the statement, as far as memory serves me, made to me by the steward of the estate in question.

The land was a red clay of rather inferior quality, under the ordinary course of farming; the first week in 5th month (May) the red globe, yellow globe, and long red kinds were, I believe, dibbled on the ridge alternately throughout the field, and of course shared similar treatment during the season of growth; each kind was raised at the same time, and the globes then gave indubitable proof of their superiority over the long in the facility of raising in particular, its connexion with the soil being as slight as in the common white turnip. A portion of the field was weighed and the weight of every ridge recorded, each of the three kinds coming alternately to the proof, the following was the result: each of the globes produced a much greater weight per acre than the long, and the quality of the former indisputably much finer than the latter. The foregoing particulars

were verbally rendered to me, and at the same time I received a promise of a written detail, but its having not yet reached me, and judging many may be about furnishing themselves with seed for the coming season, I thought it best not to delay its publication, as the disinterestedness of the party by whom the essay was made, cannot fail to remove all doubt as to its authenticity. The seed may be obtained at any of the following houses, viz.:—Beck, Henderson, and Co., 67, Strand; Gordon, Thompson, and Co., 25 Fenchurch-street; Cormack, Son, & Oliver, New Cross; Willmott and Co., Lewisham; Nash and Adams, 63, Strand.

Hoping this will not prevent the insertion of more valuable matter,

I am respectfully, thy Friend,
WM. MATTHEWS.

P.S.—As soon as the written detail reaches my hands, I will give the different weights.

ON MAKING COMPOST HEAPS.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—During the last two years, I have been favoured with a perusal of your valuable publication. I have heard more than one good agriculturist say, that it would be well if your Magazine could be put into the hands of every young farmer.

I am a young farmer myself, but what I have been taught in that way, is the production of the old school.

In consequence of reading an article in the 7th vol., page 253 of the *Farmer's Magazine*, headed, if my extract is correct, "Important Directions for the Preparation of Manure," I have been at considerable labour and some expence of collecting soil and earth, to mix in layers with the dunghill, as recommended in the above article; but my old farming schoolmaster has strenuously forewarned me not to mix the dunghill with soil upon any account, because, he says, the soil *eats the dung away*. I enquired of him how the soil came to eat the dung? To that I got no very direct answer, further than if soil was put into a dung-heap, the soil did much hurt by taking away the strength of the dung.

I have ventured to trust, you will pardon the liberty now taken, of troubling you with the foregoing. It will, however, I am authorised to say, confer a very great favour on some of your well-wishers and readers of your useful work, as well as myself, to permit the enquiry to be made through the medium of your Magazine, among your numerous enlightened correspondents, namely,—

First,—How far good soil does good or ill, by being mixed in layers in a dung-heap.

Secondly,—How far weeds in a green state, if put in layers, will have the same, or what different effects.

Thirdly,—As to that of peat moss, put in layers in the same way.

And Fourthly,—As to sand put also in layers, in the same way.

I beg to subscribe myself, yours, very respectfully,

A YOUNG FARMER OF THE OLD SCHOOL.

March 30.

CANADA.—THE CORN LAWS.

The Corn Laws are, it seems, attracting attention in Canada. The following resolution is extracted from a report read and approved at a meeting of the Montreal District Agricultural Society on the 1st March last.

Resolved 16—That notwithstanding that it was intended to give a boon to the North American Colonies under the Act 9 Geo. IV., cap. 60, intituled an "Act to amend the laws relating to the importation of Corn," (15th July, 1828), it has turned out to be no boon. Events have proved that the prices regulating duty were fixed too high, being 67s. per quarter for wheat, 34s. for barley, and 25s. for oats, imperial measure, which is proved beyond all doubt, per return per order of the House of Commons, sessional paper, No. 224, 1836—the average prices of the years 1829 to 1835, a period of seven years, having been 56s. 3d., 31s. 9d., and 22s., respectively, and the last year of the period 39s. 4d., 29s. 11d., and 22s. It is further proved by the fact, that these low prices, the result of great improvement in agriculture, particularly draining, and of several consecutive fine seasons, and abundant crops, having caused the agriculturists of England to cry out distress, led to the appointment of a Committee of the House of Commons, in Session 1836, to investigate how far distress existed, or whether Parliament could apply a remedy; and distress having been proved not to exist, or at least such that Parliament could not remedy, no legislation followed; but there was in the enquiry the very important admission on the part of all the Scotch witnesses before the Committee, that not only did they not feel distress, but that they were thriving, and that with good crops, with Wheat at 50s., Barley 28s., and Oats 20s., every farmer would do well. Again, on the opening of the Parliament session 1837, on moving the address upon the King's speech, the triumph of Agriculture in having given the Agriculturist the monopoly of his own market was made a boast. That under these circumstances, the existing duties as affecting the North American Colonies, cannot be justified, as with reference to Lower Canada the average price of wheat for 1821 to 1831 inclusive, a period of eleven years, was 5s. 4½d., and the last five years of the period 6s. 5d. per minimot. Prices have since been above these averages from defective crops, but it generally being admitted that at less than 5s. 6d. per bushel with a fair average crop wheat cannot be raised, and at 6s. per minimot would cost per quarter laid down in England, exchange, 8 per cent., ordinary rate of freight, &c. 57s. 9d. per quarter, independent of risk of voyage. This meeting, therefore, are of opinion, that considering the disadvantage the Canadians labour under in not being able to get their grain to England for ten months after it is reaped, and being subject to heavy freight, immense risk of voyage, &c., which should be a sufficient protection to the British agriculturist; that all grain and flour, the growth and production of the North American Colonies, should be admitted into the United Kingdom duty free. That free importation of grain and flour should be allowed into these Colonies from the United Kingdom and the Continental States of Europe, as at present, to provide against eventual scarcity in the first necessary of life—bread; the freight and charges being a sufficient protection to the agriculturists of these Colonies; but that an exception should be made against the agricultural produce of the United States, unless that Government will reciprocate and admit Canadian grain and other agricultural produce duty free.

HISTORY OF NAPOLEON. Tyas, Cheapside.—The second number of this work, which has just appeared, fully maintains the character which the first deservedly obtained.

FIGURE AND POINTS OF A PERFECT NEW LEICESTER SHEEP.

The head should be hornless, long, small, tapering towards the muzzle, and projecting horizontally forward; the eyes prominent, but with a quiet expression, and not placed far asunder; the ears thin, rather long, and directed backwards; the neck full and broad at its base where it proceeds from the chest, but gradually tapering towards the head, and being particularly fine at the junction of the head and neck; the neck seeming to project straight from the chest, so that there is, with the slightest possible deviation, one horizontal line from the rump to the poll. The breast broad and full, the shoulders also broad and round, and no uneven or angular formation where the shoulders join either the neck or the back, particularly no rising of the withers, or hollow behind the situation of these bones. The arm fleshy through its whole extent, and even down to the knee. The bones of the legs small, standing wide apart, no looseness of skin about them, and comparatively bare of wool. The chest and barrel at once deep and round; the ribs forming a considerable arch from the spine, so as in some cases, and especially when the animal is in good condition, to make the apparent width of the chest even greater than the depth. The barrel ribbed well home, no irregularity of line on the back or belly, but on the sides the carcase very gradually diminishing in width towards the rump. The quarters long and full, and, as with the forelegs, the flesh extending down to the hock; the thighs also wide and full; the legs of a moderate length, the felt also moderately thin, but soft and elastic, and covered with a good quantity of white wool, not so long as in some breeds, but considerably finer.

R. B.

Carlisle Patriot.

EXPERIMENT ON SODA AS A MANURE.

SIR,—In answer to the query of your correspondent, "Agricola," respecting the properties of Nitrate of Soda, or Cubic Nitre, as a manure, I have to state, the quantity required per acre is 112 to 130lbs., and the best mode of applying it, is, first, to sift all the small from it, and then to crush the cubes so as to render the whole about the same size; this may readily be accomplished by spreading it on a cloth on the barn floor, and running a roller over it a few times; it may then be sown (broad-cast), either alone, or mixed with coal ashes or fine mould, in the proportions of one-third nitre, to two-thirds of the other substance, and this will probably ensure its more equal distribution over the land. It will not be necessary to use either bush or other harrow, as it will dissolve in one night, nor does the land require any previous preparation for its reception.

This applies to all kinds of grain, pasture, clover, &c., and the period for using it is from the middle of March till May, when the plant is making its first effort; for turnips, it is best to drill, or sow it with the seed.—I am, sir, your obedient servant.

A BUCKINGHAMSHIRE FARMER.

Feb. 22.

P.S.—A neighbour of mine informs me, that on a piece of wheat which was nearly destroyed by the wire worm, he tried the experiment on one-half the field, on which part the result was highly successful, whilst on the other part, the crop was entirely lost.

CASE OF INTEREST TO FARMERS.

JOHN PAGE, EXECUTOR, &c. v. MARY PAVY.

This was an action tried at the Gloucester Assizes last week. The plaintiff is the executor of a Mr. Edward Page, a farmer, who lived in Gloucestershire. The defendant is the widow of the late Mr. Pavy, of Wroughton, in this county, who was an extensive dealer in corn. Since her husband's decease, she has carried on the business, with the assistance of a very active agent and manager, Mr. Henry Newton. At Cirencester market, on the 9th of October, 1837, Mr. Newton had a sample of old cone wheat for sale. The plaintiff looked at it, and after observing that it was "one year old wheat," which was at once admitted, asked Mr. Newton, if he could warrant it to grow. Mr. Newton replied that he could, "for some of the same wheat had been already sown and was up." The plaintiff then agreed to buy eighteen bushels of the wheat for his uncle, the testator, which was accordingly sent to him on the following day. The wheat was soon afterwards sown on the farm of the deceased; but it was alleged against the defendant, that it did not grow, and the plaintiff (his uncle being dead, and he having been appointed his executor) commenced an action against the defendant, to recover not only the price of the wheat, but damages also for the loss of crop, and the expences of ploughing, harrowing, sowing, &c., &c., &c. The action was defended on the ground that the warranty did not imply that the seed would absolutely grow, in the literal sense expressed, but only that it was good growing seed at the time of sale, which allegation was urged by the defendant with greater confidence, from the fact that some of the same wheat had been sold by her to other farmers, which had not only grown and come up properly, but had exhibited a good plant.

At the trial the plaintiff produced witnesses who proved that the wheat was sown on two separate portions of land, properly prepared and cultivated, and in good condition to receive it: one, a piece of six acres; the other a piece of one acre only, part of another inclosure of six acres. The wheat sown on the one acre piece grew, though not well, yielding only about fifteen bushels of wheat. That sown on the six acre piece failed, and was ploughed up in the month of May following; and it was contended, that as the defendant had warranted the wheat to grow, but it had failed there was a breach of the warranty, and she was responsible to the plaintiff for the loss. On the part of the defendant no witnesses were called, but it was most ably urged to the Jury by her counsel, Mr. Sergeant Talfourd, that no warranty, in the sense contended for on the other side, had been given—and that, at all events, the failure of the seed in the particular instance in question, (especially as it had been admitted that some of the same bulk, sold to other farmers, had grown properly,) must be attributed to some unforeseen mysterious circumstances, such as the state of the weather, the state of the soil, or some other cause in nature, which the eye of man was not allowed to ken, and not to any defect inherent in the seed itself.

The JUDGE (Mr. Justice Patteson) in summing up, told the Jury there were two questions for their consideration—first, whether a warranty was given—and secondly, whether that warranty had been broken? They must be satisfied not only that the wheat did not grow, but that it did not grow because the seed was bad. If their verdict should be for the plaintiff, they would then have to consider what was the reasonable and fair amount of damages he ought to receive; for, to give the plaintiff merely the amount he had paid for the seed, without giving a compensation for the loss of crop, would not be doing justice.

The Jury retired to consider their verdict, and after some time returned with a verdict for the defendant: the foreman stating, "we find that there was a warranty, but that the failure of the crop was not from any defect in the seed."

The trial excited a great deal of interest.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR APRIL.

From the commencement up to about the 20th of this month the atmospheric temperature was, for the period of the year, cold and ungenial, which, and the cold north-easterly winds, materially obstructed the growth of the wheat plants, and in fact of the whole vegetable creation. Subsequently to the above date the weather has been mild, whilst the fine rains, aided by warm sunshine, have proved exceedingly beneficial in bringing forward the grain plants above the surface of the soil. The accounts which we have received from all parts of England respecting the crops are, on the whole, favourable, though vegetation in general is backward. In some parts of Norfolk, Yorkshire, and Cambridgeshire, a few patches of land sown with wheat bear an unpromising appearance; but from other quarters no complaints have reached us.

Out-door farm labours have progressed under unusually favourable auspices, the absence of deluging rains having enabled our farmers to complete in many instances the sowing of oats; whilst barley, beans, and peas have been, for the most part, got into the ground quite as early as usual, and will doubtless yield an abundant crop. Preparations have been made for sowing mangel wurzel and other green crops, the land being already ploughed and harrowed for the reception of the seed.

Depastured stock, particularly sheep, have fed extremely well upon their winter food, which has been very abundant; but we regret to state that the lambing season has not turned out quite so favourable as could be desired, the losses on the south downs of Sussex, as well as in many parts of Hampshire, being described as alarmingly great, caused chiefly by the severe winds. The pastures and sheep downs have been throughout the month luxuriant.

Considerable fluctuations have taken place in the prices of grain, with very moderate supplies on sale, particularly of that of home growth; however the deficiency has been amply made good by foreign supplies. In the cattle markets the demand has been tolerably firm, and the currencies well maintained.

From Scotland our advices intimate that the time of the agriculturists has been almost wholly occupied in the fields in sowing all kinds of spring corn, and that everything relative to agriculture is sufficiently forward.

In Ireland very little grain now remains to be sown; and it is understood that so large a breadth of land has not been cultivated with wheat since the commencement of the present century as in this season.

Much of the attention of those immediately engaged in the corn trade appears to have been directed to the issuing of a Treasury Minute to the authorities at Plymouth, ordering that in future all vessels arriving there with cargoes of grain from the Black Sea, bound to London or any other port, may clear out at the same rate of duty payable on arriving at the port first above mentioned. This order was made known by some persons a few days previously to any enhancement having taken place in duty from its nominal price of 1s. per quarter, from the well known fact of vessels which had touched at Plymouth at the time the duty was only 2s. 8d. per quarter, having considerable quantities of wheat on board, being entered at the Customs in London at that amount, when the actual *time* duty was as high

as 6s. 8d. per quarter. On being reported, it was considered as an infringement of the present existing corn laws; hence has arisen much declamation against the alteration. However only about 25,000 quarters of foreign wheat have thus been entered for home consumption.

Since the corresponding period last year, there appears to have been upwards of 70,000 acres of waste land successfully drained and brought under wheat culture in various parts of the counties of Lincolnshire and Cumberland. This is a most gratifying instance of the benefits arising from the establishment of agricultural societies, throughout the length and breadth of the land, as by these a great stimulus is created for increased exertions on the part of our farmers; and sure we are that whatever attempts of a similar description are made, the expectations of the most sanguine will be realized.

The following is a statement and comparison of the supplies and prices of fat stock, exhibited and sold in Smithfield cattle market in the course of the month.

The supplies of beasts have amounted to 12,459; of sheep and lambs, 111,456; of calves, 620; and of pigs, 2,980.

The quotations of beef have ranged from 2s. 2d. to 4s. 4d.; of mutton, 3s. to 5s. 2d.; of lamb, 6s. to 7s. 2d.; of veal, 4s. to 5s. 4d.; and of pork, 4s. to 5s. 2d. per 8lbs. to sink the offal. On comparing them with those realized in the preceding month, we find that with the exception of beef having sold at drooping rates, owing to the superabundant supplies offering, but little fluctuation has been apparent.

About 2,655 of the Scots, homebreds and Devons, forming the above supplies, have arrived from Norfolk; 410 Scots, Devons and Runts, from Suffolk; 90 Scots, Devons, and runts, from Essex; 200 Scots, Herefords, and Devons, from Cambridgeshire; 1,700 short-horns from Lincolnshire; 1,000 short-horns and Devons, from Leicestershire; 400 short-horns and runts, from Northamptonshire; 800 oxen, Irish beasts, runts, and Devons, from Oxfordshire and Warwickshire; 1,500 horned and polled Scots, by sea, from Scotland; 1,900 Devons, runts, and Herefords, from Devonshire and Herefordshire; 120 oxen, runts and Davons from Sussex; 70 Devons and cows, from Surrey; 80 cows, runts, Devons and Herefords, from Kent. The remainder of the supply of beasts came chiefly from the neighbourhood of London.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, April 23, 1838, and Monday, April 22, 1839.

At per 8lbs. to sink the offals.

	April 23, 1838.		April 22, 1839.	
	s. d.	s. d.	s. d.	s. d.
Coarse & inferior Beasts	2 2	2 6	2 2	2 4
Second quality do.	2 8	3 0	2 6	2 10
Prime large Oxen.....	3 4	3 8	3 4	3 8
Prime Scots, &c.....	4 0	4 4	3 10	4 2
Coarse & inferior Sheep	3 4	3 6	3 6	3 8
Second quality do.	3 8	3 10	3 10	4 2
Prime coarse woolled do.	4 2	4 6	4 4	4 6
Prime Southdown do..	4 8	5 0	4 10	5 0
Lambs	5 0	7 0	5 10	7 9
Large coarse Calves ..	4 4	4 10	4 4	4 10
Prime small ditto.	5 0	5 4	5 0	5 6
Large Hogs.....	3 2	3 8	4 0	4 8
Neat small Porkers ..	4 10	5 2	5 0	5 2

SUPPLIES.

	April 23, 1838.	April 22, 1839.
Beasts.....	2,010	2,874
Sheep and Lambs....	24,322	26,941
Calves.....	115	127
Pigs.....	604	700

By the above comparison, it appears, that the supply of Monday, April 23, 1838, was composed of 764 Beasts, 2,619 Sheep and Lambs, 12 Calves, and 96 Pigs less than that of Monday, April 22, 1839.

For the time of year, the quality of all kinds of stock has proved exceedingly prime. About 500 lambs have arrived from the Isle of Wight, by the Southampton Railway, in excellent condition: whilst it is expected that the supplies from that quarter, during the present season, will be extensive. As the lambs weigh from 6 to 6½ stones each, they have not produced more than 6s. 2d. per 3lbs. in any instance.

The arrivals of slaughtered meat, up to Newgate and Leadenhall markets, from Scotland and various parts of England have been extensive, viz. 600 carcasses of beef; 8,500 do. of mutton; 7,000 do. of veal; 9,000 do. of pork; and 100 do. of lamb, a large portion of which have produced low prices.

BEDFORDSHIRE.

When our last report left us, in the early part of March, everything seemed to be going on well. The fine weather, however, was of very short continuance, and vegetation has since scarcely made the least progress. The beans and peas are just breaking the soil, and in the more sheltered situations the rows may be seen at a distance; the same of oats and the early sown barley; but for the length of time these crops have been put in, they are remarkably backward. March dust was this year scarcely anywhere to be found, and for the last fortnight or three weeks the wind has been almost without intermission blowing from the east and north east. We have had also several heavy falls of snow, which has greatly retarded the spring sowing. For the last week, however, we have been favoured with a dry atmosphere, which has enabled the farmers again to proceed with their farm operations. The turnips hold out pretty well, and it is most fortunate that they do, for as yet there are no signs of any keeping upon the young seeds, tares, or pastures. It is not too late, however, yet to hope for a favourable season, as experience seems to corroborate the fact, that with our changeable climate it is not desirable to see vegetation at all forward before the end of April, as it is almost sure to be cut off by frosts; and we think the observation more particularly holds good as it regards fruits of all descriptions. There is, however, too much reason to fear that already the spring has been too wet for the strong land districts, and we shall be surprised if the crops upon the more retentive soils should do well. The fall of lambs is generally considered to be small this season, having very few twins, and where the sheep have been confined to the turnip pens, they have done badly for the last month. Wool is considered a heavy trade, but mutton (though not dear) makes a fair price from 6d. to 7d. per lb. Beef, however, has been almost unsaleable; a very losing game to the winter graziers. The corn markets vary but little, wheat making 9s. per bushel, and rather more for the very best. Barley has also been firm for the last two or three weeks, varying from 4s. 6d. to 5s. per bushel, with other grain tolerably proportionate.—Your reporter was glad to find that the second attempt in Parliament to deprive the agriculture of the country of its present protection was scarcely more successful than the first. We quite think, bearing in mind the wild and unreasonable demands made by the ultra free-trade party, that both Houses of Parliament came to a very proper conclusion. As soon, however, as the mill-owners of Manchester and elsewhere shall be disposed to moderate their demands, and

drop their anti-British notions, we should be glad to see the moderate of all parties combining to make such alterations in our present scale of duties as experience has shown to be desirable, whereby the state might derive a more productive revenue, extreme fluctuations be rendered less frequent, and our agriculture still enjoy quite as efficient a protection! We repeat it, however, with the insolent and uncompromising demands which the agitators were making upon the Legislature, that all who had any regard to the permanent welfare of the country, could not do better than meet those demands with a direct negative.—April 12.

YORKSHIRE.

The fine weather we realised in February, and which seemed the precursor of an early spring, only tended to stimulate vegetation, the more to feel the check which has been subsequently given to it. About the 15th of the month we had a succession of five or six days so incessantly raining, as to completely saturate all descriptions of soils, and has entirely put a stop to all outdoor operations, and especially the spring seed-time, as if there had been a covering of snow. The consequence is, a more backward spring seed-time has not occurred for years, and very little, even of oats and beans, have been put in during the month of March. The activity since manifested has indeed accomplished wonders, and the dry weather since that period has enabled the farmer who had a sufficient degree of patience, to put his seed in a moderately good seed-bed; but the weather has been, and still continues, so terribly cold, as almost to preclude the possibility of the seed germinating. The weather is indeed dry, but the nights are cold and frosty, and the wind now changes from the north, east, or north-east, and scarcely a particle of green food of any description can be seen. Turnips are all exhausted, and even the clover leys have less food upon them than in February, not to mention the pastures which are bare and bleached. The wheats have in some measure partaken of this check to vegetation, and truth compels us to say they look but indifferently; but let it be remembered, that a few showers and a little warmth may so revive them as to just reverse our remarks, almost before this reaches London, at least before it will be read by your readers, so astonishing a change will a day or two make at this season of the year; and we may safely venture to say, that no permanent injury is yet sustained by the plant, and certainly there is no deficiency of braid in any instance of moderate cultivation which we have witnessed. The lambing season is fast progressing, and drawing near to a close. We have generally favourable reports as to the number of lambs, but owing to the cold east winds, and scarcity of nutritious food, great numbers have died. Some farmers put them upon the wheats, stunted as they are, others prefer breaking the clover leys, but all good farmers supply them with oats, dear as they are to purchase, the price being 28s. to 30s. per qr. Farm operations are moderately forward, sowing excepted. Markets for stock are very heavy, the deficiency of food causing a glut in the markets. Corn has a tendency upwards, and a brisk demand.—April 9.

NORTH DEVON.

Although there has been many nights of very sharp frost within the last two months, yet the frequent falls of snow, sleet, and heavy rains has saturated the land so much as to prevent the spring tillage, except on the most hilly and dry situations; consequently, the necessary work is in an unusually backward state, little having been done until the present week, that the dry easterly wind, which has prevailed since the beginning of the month, has enabled the farmers to employ themselves fully; there is, however, a considerable portion of land yet too wet to be worked. The wheat in most places looks strong and healthy, and has moated well; there are some complaints where the tillage was late on the moorlands, that the plants look thin and weakly; the prices for this grain in the markets has varied during the

winter from 10s. to 13s. per 67½ lbs.; present rates from 10s. to 11s., but as the supplies have been much reduced the last two or three weeks, it is not unlikely that sales may soon be effected again at 12s. to 13s. per bushel, and it is expected that a supply of Foreign wheat may be wanted before harvest. We have not heard of any barley being sown until within the last few days, therefore can say nothing of the ensuing crop; the farmers have done much beyond their expectation with the produce of last year, the demand from Scotland and Wales having been considerable for this article, it has brought good samples, fit for seed, to be now worth from 5s. 0d. to 5s. 6d. per bushel: most farmers who were partial to the Chevalier barley when it was first introduced, find it too weak in the straw, and have discontinued its use. The entire crop of oats has not turned out so heavy, or fine in quality as was expected at the early part of the season, yet a free sale has been found for a considerable quantity which has been brought forward of good color, and weighing about 37 lbs. per bushel, the prices obtained have been good, and as the supplies has lately fallen off the article is now worth, to the growers, 2s. 9d. to 3s. per bush. Turnips are nearly finished in most places, but although the weather is extremely cold, clover and other grasses, in many situations, are making a fair shew; the few winter vetches that were sown look promising. Potatoes are in good supply, with prices too high to admit of many being sent to other markets. The lambing season has been favourable, few losses having been sustained, but the mortality among sheep by the rot was very great in several districts in the early part of the winter. Fat cattle are scarce and prices are high, bullocks are worth 10s. 6d. to 11s. per score; sheep, 7d. per pound; and pigs, 7s. 6d. per score; store cattle is also high in price, with a considerable demand.—11th April.

SOMERSETSHIRE.

Any one who had only been a resident in this country the last three years, would pronounce our springs at least any thing but genial; it is evident from our old country sayings, that the seasons we have had of late at this period of the year, have been exceptions, not the rule. The cold wind for these two weeks past, and more particularly since the rain with which this month commenced, have been most cutting; on the third, fourth, and fifth it was particularly severe, and the frosts we had on the sixth and seventh were quite unusual at this season; this coming after the land was completely saturated with nearly three days' rain, has completely checked vegetation, and the early spring corn and wheat have lost that freshness which they had acquired by the brief period of mild weather we had towards the end of last month, and at present the wheat plant has assumed a yellowish tinge. I observe that where the land is liable to be affected by the wet, there is considerable deficiency of plant; some pieces of wheat are certainly looking well, a good deal middling, and some bad, the present barren winds and cold nights is against its wricing, as we term it, more particularly on the poor soils, and we cannot at present look forward to a great burthen or an early harvest. It is also a very bad season for the early sown barley, that which goes in now will, I think, have the best chance should there be a change soon, the quantity of wet which fell the early part of last week stopped the progress of sowing, and on heavy soils the land has but just become fit for working. There is a good demand for seed barley, and I should suppose a large breadth of this corn was going in, few crops were more profitable last year. Oat sowing has just commenced, it will be backward. There is a much larger quantity of land than usual allotted for flax, the quantity last year was short, and it paid well. There is the appearance of a partial blossom on the apple trees, they are very backward, which is in their favour. Our lambing season has been good, the stock of sheep has been progressively increasing, and confidence seems pretty much restored respecting their soundness; the weather at present keeps them short of food on the pastures, this will be felt mostly by the couples, the sale of this stock has been good, and the prices advanced several shillings

per head, a good hog cannot be purchased under 30s., and for couples 38s. to 48s., but the last few weeks a large supply of live stock has affected the sale, our markets have been overdone, the high prices given, and almost certain poor remuneration in prospect to the grazier, have deterred them from purchasing freely. There is still a good demand for cows and calves, a tolerable cow fetching easily 13l. or 15l., and nothing worth purchasing under 12l. There is a great scarcity of mutton, which is worth 7½d. per lb. Beef is also scarce, and good sells readily at 10s. to 10s. 6d. per score. Calves for weaning have fetched good prices, more calves will be reared than for many years past. The price of pork has gone down to 8s. 3d. per score, but the price of poor pigs has been maintained, here also the raiser of this stock will do the best. Our markets for wheat have been any thing but steady, it went down the early part of the month rapidly, is now looking up, prime samples fetching from 9s. 6d. to 9s. 9d. The price of beans has been gradually receding, and they are a very dull sale at 4s. to 4s. 3d., a few very prime samples are only fetching 4s. 6d. Barley, in consequence of the demand for seed, is advanced in price. Oats have fallen, but at present there is more demand. There has been very little done in wool, the price at present is almost nominal, the growers holding rather than submit to the late reduction of price. The price of seeds has not been maintained, and there has not been much animation in the trade as regards the stock of corn in hand, except beans, I should decidedly say there is not the average bulk on the farmers' hands usually held at this season, and although the stock of hay is increased in comparison with last year, much more will be consumed than was expected.—April 11.

ESSEX.

Whilst we are writing, a shower fraught with fertility is falling, affording a pleasing contrast to the cold north easterly blasts which have lately been so prevalent. We have to report rather a backward season but can safely say from minute observation, never in all our experience have we seen the appearance of the crops promise so well; go where you will, one unbroken plant of wheat presents itself; examine it and you will find it though a little discoloured, firm and healthy at the root and studding most luxuriantly; another month of warm weather, will do wonders, and after these beautiful rains, we may expect an equally good plant of the spring sown corn; where this has appeared, it looks extremely well; peas more especially, which plant with mangel wurzel, is now going in; and we observe a plan adopted on the heavy lands, of putting it in on lands scarified without being ploughed since Christmas. We think this is a plan highly to be recommended, as it affords so fine a seed bed, but which cannot be obtained by any other means. There is a considerable quantity of mangel left, but turnips and cabbages have nearly all disappeared. What few lambs have gone to market, have not brought home satisfactory prices to the grazier. The time has now arrived when some estimate ought fairly to be made of the probable capabilities of our farmers to supply the markets till next harvest with wheat, and considering that four months will probably elapse, till supplies of new grain appear, we hold an opinion that allowing for the half a million which will most probably come from abroad on the next 1s. duty, and the holding back of the speculator, there will be fully sufficient to meet every demand. In our county we see quite as many if not more corn-stacks standing than is usual at this period of the year, especially among the small farmers. An opinion has been very prevalent among many that corn must range extravagantly high this spring, (but we have not heard so much of this opinion lately), and this has caused a reservation of grain.—April 16.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

HOWDEN SPRING FAIR.—The attendance of dealers at the Howden spring fair on Tuesday last was numerous and respectable, amongst whom we noticed Messrs. Dyson and Shaw, from London. The supply of good horses was small, and for which great prices were obtained; for middling and inferior horses there was a tolerable supply, but the demand was not brisk. There was a large show of cattle on Wednesday, and there being a fair attendance of buyers, a brisk demand ensued. The price of fat ranged from 7s. 6d. to 8s. The present high prices of the cattle market is attributed to the late cold and ungenial state of the weather; but, during the last few days, we have had a small instalment of spring, and all nature assumes a more cheerful aspect, and the alternate genial showers and bright sun that generally accompany the latter moiety of the month of April, will tend to promote the growth of the young herbage, and, consequently, we may anticipate, at no distant period, a material reduction in the prices of both fat and lean stock. At twelve o'clock the Howden Agricultural Society held their annual show, when a considerable number of agriculturists, &c., were admitted, and were gratified with a most splendid display of some of the finest stock of the country. The judges on the occasion were Mr. Wiley, sen., of Bransby, Mr. Robinson, of Carnaby, and Mr. Dunswell, of Harswell, who took great pains in exercising their judgment, and gave general satisfaction. The following is a list of the premiums awarded:—Mr. Howden's Cavendish, Driffield, best thorough-bred stallion, 5*l.*; Mr. Hant's Candidate, (Garton) best coaching stallion, 5*l.*, Mr. Andrews's Young Ebor, (Balkholme) second best do., 2*l.*; Mr. Steward, Holme, best coaching brood mare, 2*l.*; Mr. E. Thompson, Armin, best hunting brood mare, 2*l.*; Mr. T. Denby, Armin, best coaching gelding, 3 yrs., 2*l.*; Thos. Clark, Esq., best coaching gelding, 2 yrs. old, 2*l.*; Mr. Hairsine, Bellasize, best carting stallion, 2*l.*; Mr. Edmd. Thompson, Armin, best bull, 5*l.*, Mr. Edward Latham, second best do., 2*l.*; T. Clarke, Esq., best breeding cow, 2*l.*; Mr. E. Thompson, Armin, best 2 year old heifer, 2*l.*; Mr. Wells, best yearling heifer, 2*l.*; — Egremont, Esq., best fat cow, 2*l.*; Wm. Granger, of Holme, he having brought up solely by his labour 10 children, without receiving parochial relief, 2*l.*; Saml. Smith, Brighton, he having brought up solely by his labour 10 children, 1*l.*; Jonathan Woodall, of Goole, do., do., 1*l.* At three o'clock a considerable number of the friends of the above institution, with the judges, dined at the Half Moon Inn; Thomas Clark, Esq., of Knedlington, in the chair, who, in announcing the successful candidates for the respective premiums, entered into, and expressed, a clear and luminous view of the individual and national advantages resulting from such institutions; and, in addressing the aged agricultural labourers, paid a just tribute to the unwearied labours and independent principle which had supported them, during a long life of labour and anxious solicitation for their numerous offspring. After many interesting speeches were given by the chairman, which were responded to by the company, the evening was spent in that rational and orderly conviviality which so peculiarly distinguish the meetings of the Howden Agricultural Society, and the pleasure of the day did not terminate without adding an increased number of agriculturists to the list of subscribers; and we hope next year to have the pleasure of announcing many landlords, who, if desirous of doing good, cannot do better than imitate the example of the Earl of Beverley, whose annual subscription of five pounds places him as its most liberal benefactor.—*Doncaster Gazette.*

CAMBRIDGE FIRST CATTLE FAIR.—This fair was held on Saturday se'nnight, and was most excellently attended, coming fully up to the most sanguine expectations of its promoters and friends. Indeed it is somewhat surprising, considering the situation of Cambridge, placed in the midst of a district purely agricultural, and with no other within a considerable dis-

tance, that fairs of this kind have not been established long since. At Saturday's fair there were—beasts, 300; lambs, 179; sheep, 4,040, and a good show of horses. Hoggets fetched from 46s. to 48s., and other stock fetched good prices. It was considered by many gentlemen present that Thursday or Friday would be a more convenient day for holding the fair than Saturday, and we hear application is intended to be made to have the day altered.—*Cambridge Independent.*

At **WOODBIDGE LADY FAIR** the stock of hoggets, of which there was a good supply, for grazing, were not much in request, in consequence of the vegetation being so backward; few sales were effected in this stock, but what was done was for Leicesters, 25s. to 38s., and Downs, 30s. to 36s. each. Fine things sold full 7s. per stone. The prime stock of both descriptions sold freely. The show of horses was excellent, although not so numerous as has been witnessed upon former occasions, and several of the cart descriptions fetched fair prices.

DEVIZES, Saturday, April 20.—Our spring fair which was held this day, was on the whole well supplied and fully attended. There was a large number of springers, heifers and calves, the greater part of which were sold at high prices. The supply of beef was short and the sale dull. Good graziers and oxen were plentiful, but owing to the high figures asked, they went off rather slowly. Milch cows with calves, were in good demand, and sold at from 12*l.* to 20*l.*, and in some few instances, even higher. The number of sheep penned was small, and notwithstanding the trade was rather dull; good things sold fully as well as at the fairs and markets lately held in the neighbourhood. With the exception of a few good cart colts, the show of horses was of a very ordinary description; there was, however, a good deal of business done among them.

DROGHEDA NEW FAIR.—One of our new fairs was held, at which we observed a very good supply of all descriptions of cattle. Bullocks sold from 18*l.* to 23*l.* each; heifers from 14*l.* to 20*l.*; widders from 40s. to 55s.; ewes, 35s. to 45s.; lambs, 20s. to 22s.; pigs numerous, from 35s. to 38s. per cwt. There were only a few horses.—*Drogheda Journal.*

ARDEE FAIR.—This fair, held on the 10th inst., was rather a small one; however, the quantity of stock which appeared brought fair prices. It consisted chiefly of dry cattle, springers, stippers, and some lots of sheep, with a large exhibition of swine. Little beef worth purchasing appeared, and what did, rated high, as also, such sheep as were fit for the knife. Beef rated from 40s. to 56s. per cwt., sinking offal; mutton from 5d. to 8d. per lb. The few horses offered for sale were of an inferior description, if we except about a dozen.—*Drogheda Journal of Friday.*

AGRICULTURAL STOCK.—We have frequently of late had occasion to notice the degree of superiority to which the cattle and sheep on the farms in this county have been brought, and have now to speak of three such bullocks, of their age, as perhaps have never before been killed in the parish of Newton St. Cyres. These were two heifers, not exceeding four years old, and a steer, all not merely of superior quality, but of extraordinary proof, which were purchased of Mr. John Grosvenor, of East Holme Farm, Newton St. Cyres, by Mr. Wm. Batting, of the same parish, and of North Street, in this city, butcher, for seventy guineas. The two heifers turned out 48 score per bullock, and carried each about 140lbs. wt. of rough fat. The steer is estimated at 52 score! The unqualified praise of every one who has seen these fine animals, has been bestowed upon them.—*Exeter Flying Post.*

EXTRAORDINARY SPECIES OF CLOVER.—A gentleman has just arrived from Georgia, who has brought with him a new colossal and prolific cloverseed from Bokharia, which he is going to submit to Mr. Loudon. According to the accounts of the most celebrated travellers who have visited that distant and

important country, which is equal in climate to that of Great Britain, all grains, herbs, and vegetables distinguish themselves by their gigantic growth. The clover seed just imported grows to the enormous height of 12 to 15 feet, and can be cut every month. But this is not the only valuable property of this most extraordinary production of the vegetable kingdom. Out of the stem a hemp is prepared which is so highly esteemed in the distant region of which it is a native, that preference is given to it over all other sorts of it. Should the plan succeed in England, and of which there can be but little doubt, it will form a new era by rendering this country independent of foreign supplies of clover-seed. It is fortunate that it has arrived in time to be tried this year. It must be sown in April. It is said that each grain will produce 30,000 seeds.

PROLIFIC POTATO.—Two years ago, we published an account of a most extraordinary production from the planting of one and a-half measures of potatoes, by Mr. Malpas, gardener to W. Ormsby Gore, Esq., in Perkington Park.—The quantity was 95 measures, besides waste.—The following year some very great crops were raised; and last year a gentleman in the neighbourhood of Oswestry procured one of the largest size, which was divided into fifty sets, and from them were taken up two and a-half bushels, of 90lbs. to the bushel! They are of a long form, abounding in eyes, in colour a fine crimson red, and known in that vicinity as the "Perkington Foresters."

GARDENING OPERATIONS FOR MAY.

The temperature of melon and cucumber-beds should be carefully attended to, and the declining heat renovated by fresh linings if necessary. The vines should be moderately thinned out to prevent confusion, and to admit a free circulation of air to all parts of the bed. Let water be supplied liberally to cucumbers, but as melons approach to maturity, water should be more sparingly administered, giving only as much as will keep the plants alive until they ripen off their fruit. Prepare dung for cucumber ridges by frequent turnings, and stop the young plants intended for turning out at the first or second joint. Shade by day, and protect by night, as directed last month.

Examine succession pine plants, and shift such as require larger pots, remove all small suckers, and cut out all decayed and useless leaves and roots; the sizes of the pots must be suited to the strength and magnitude of the plants, above all things, avoid over-potting. As the beds by this time will have sunk, and the heat considerably declined, it will be necessary to fork over the tan or leaves to the very bottom, throwing out a portion of the most decayed matter, and adding the necessary quantity of fresh leaves or tan, observing to keep the greater part of the fresh matter nearest the bottom; when the plants are replunged, give them a gentle watering to settle the earth about their roots, and syringe them overhead, to wash the dust off the leaves; admit air every favourable opportunity, and keep the temperature as steadily as possible, to 70° or 75° mornings and evenings.

Let the fruiting pines be abundantly supplied with heat, air, and water; as the fruit approaches maturity, less water should be given, but while it continues to swell, that element should be liberally supplied every second or third day; the operation of steaming should also be continued morning and evening. In sunny weather, the thermometer may be allowed to range from 80° to 90°, and fires should be kept up all night, to prevent the

mercury falling below 75°. Rub off all the small suckers that form on the foot-stalk of the fruit, and allow only two or three of the strongest of those on the stem to remain on each plant. Apply the syringe occasionally to refresh the foliage, and clear the plants of dust.

Continue the use of the syringe in the vinery, and let the borders be abundantly supplied with water in dry weather. Tie up the shoulders of the bunches, and thin out the berries to allow room for those remaining, to swell to their full size, and to prevent their damping in cloudy weather after they are ripe. Maintain a regular temperature as advised last month.

In the peach house, attend to the pruning and training of the young shoots, and let the fruit be thinned out to a fair and regular crop. The syringe should be regularly applied morning and evening, and the fumigations of tobacco repeated upon the first appearance of fly.

Attend to neatness in the conservatory and green-house, water should now be freely supplied as often as required, and air admitted during the whole of every fine day; stake, train and shift as may be necessary. Tender annuals intended to replenish the greenhouse, after the plants are out, should be turned frequently shifted and liberally supplied with water; propagate by all the usual methods as recommended last month.

Sow tender and hardy annuals for succession, pot off the tender, and plant out the hardy sorts sown in March and April.

Attend to carnations both in borders and in pots; tie up the flower-stalks as they advance, and frequently stir the surface of the beds with the hoe and rake; part of the surface mould in the pots should be removed, and a little fresh compost applied; water should be given in a greater or less quantity, according to the state of the weather. Study general neatness in every department of the flower garden.

Plant evergreens of all kinds, and let them be bountifully supplied with water at the roots, and also over-head every second or third day if the weather be dry.

Continue to protect the blossoms of wall fruit trees from hail and frost, but remove the covering as soon as the danger is past. Divest the trees of all superfluous wood by disbudding, allowing only such shoots to remain, as can be easily laid in without crowding. About the end of the month, examine all newly grafted trees, let the clay be taken off, the bandages loosened, and all shoots from the stocks below the grafts rubbed off. Let strawberry beds be plentifully supplied with water in dry weather.

About the end of the month, plant out on a warm south border, the various sorts of gourds, vegetable marrows, tomatoes and capsicums.

Sow small salads once a week, radishes, lettuces, spinach and peas every ten or twelve days, and about the beginning of the month, cauliflowers, brocolis, cabbages, Brussels sprouts, savoy, celery, turnips and sea kale, also salsafy, scorzonera, and skirrets if not sown last month.

Plant scarlet runners, Windsor, Toker, and dwarf kidney beans, potatoes, artichokes, celery, cauliflowers and all the brassica tribe in moist showery weather.

Hoe and thin out all early sown crops, stick peas, hoe and earth up cabbage, potatoes &c. Rough dig all vacant pieces of ground, and clear every part of the garden of rubbish and weeds.

J. T.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF APRIL.

During the greater part of the month which has passed away since our last publication, the weather has been unusually cold for the season of the year, and consequently ungenial. Vegetation has made little progress, nor has the season, in as far as it has yet gone, been in any particular degree propitious to the spring operations in the fields. We are therefore again threatened with another late season, which, taken in connection with the great deficiency which existed in the corn crops of last year, forms any thing but a pleasant prospect for the future. A reluctant spring is seldom indeed attended with any advantages to the agricultural pursuits of those who devote their capital, talents, and industry in operations connected with this by far the most important interest in the British empire; on the contrary, a late corn season is always attended by much hazard, and frequently is concluded with immense damage to the crops generally, as has been but too truly proved by the injuries done from this cause alone last year to the produce of the fields generally. The season at the present time is fully one month later than it is on the average of years in our climate, we very rarely indeed have one month in this manner to spare out of the twelve devoted to field labour. In the home counties no doubt the danger attending a late spring is not so considerable as it is in the other agricultural districts, but to the north of the Humber, throughout the whole of Scotland, and to a great proportion of Ireland, ungenial weather in the commencement of the season, is always injurious in a more or less degree, and not unfrequently fatal in its conclusion to the farming interest. Another late harvest in the present state of this country would indeed be a great national calamity. By the last crop the farming interest has suffered in many instances a great loss of property, the prices obtained for their produce being in no manner commensurate to the deficiency existing in that crop, and another year attended by similar consequences would be almost ruinous, for even a large crop, following one of the description of last year, would not be sufficient to supply the deficiency occasioned by that event in the usual stocks of home grown grain in the producers' hands, and from this circumstance alone the manufacturing and commercial classes must for a time suffer the loss in a considerable degree of a very important market for the consumption of various and valuable articles produced by their industry. The circumstances of last year's crop have encouraged a larger importation of foreign wheat into this country than is on record in the corn history of this country during the same period. The corn either has already been, or most certainly will eventually be paid for, not by any material addition to the usual quantity of British manufactured goods exported to those foreign states, from which the wheat has latterly been imported, but by money, as the rapidly diminishing quantity of specie and bullion in the Bank of England already most clearly establishes. Out of the numerous evils however, which must attend

the inferiority of last year's crop of grain, one great benefit must arise, for the necessity of legal protection being extended to the agricultural interest will become before the lapse of another year perfectly obvious even to those manufacturers who consider themselves injured by the existing corn laws. Had the wheat crop of last year been sufficiently large for the consumption of the people, several millions sterling of money, which has latterly been given away to foreigners in exchange for foreign grain, would have remained in the possession of the cultivators of the British and Irish fields, by whom this sum would either have been paid to the trading and manufacturing interests in exchange for articles of necessity and luxury, or it would have been embarked in agricultural improvements, where it would, to use the language of the present President of the Board of Trade, "fructify, and in due season reproduce itself by a hundred fold, thus increasing the means of the country to pay for additional quantities of the products of the industrious classes of society." Provisions are either dear or cheap only according to their relative position with regard to the value of other articles of necessary consumption. The trader and the manufacturer can never be prosperous when those with whom they have business transactions are in adversity, nor is it possible for commerce to flourish on the ruins of agriculture. The surest, the safest, and immeasurably the most valuable and most extensive market for the consumption of all articles of manufacture, is that furnished by agriculture, and prosperity in the latter must eventually extend itself to the former in all its ramifications. That manufacturing property is not improved by the too low value of the necessities of life is but too well established by the present condition of that interest in Belgium and in France, in both of which kingdoms provisions are almost below their intrinsic value, and yet the mercantile failures there have been most distressing and destructive to the general interests of Belgian and French society. The repeal of the corn laws would be attended here by consequences equally fatal to the prosperity and consequently to the happiness of the community, for the ruin of the agricultural interest would be the first effect of the repeal of those laws, and disastrous results to all classes, whether the monied, commercial, or those apparently farthest removed from the influence of agriculture, would, and that very rapidly too, follow. To encourage the cultivation of our own fields at home, and to assure all who embark their capital and employ their skill in converting waste lands into productive corn fields, is not more patriotic than it is universally advantageous to every one interested in the empire. By labours of this description not only must the people become annually less dependent on foreign nations for bread, but to a certain extent also less dependent on the consequences of our changeable climate themselves. Under the influence of wise and properly regu-

lated corn laws, England herself may still be so far improved in agriculture, as to yield double the quantity of produce now obtained from her fields and marshes. From Scotland still greater benefits would necessarily arise, as her soil is poorer and her climate far inferior to the southern part of the empire, but to Ireland the advantages which must attend a well regulated system of corn laws are literally incalculable. From her rivers and from her morasses many millions of acres of the richest soil will in due time be reclaimed, and rendered not only useful but also most valuable to the inhabitants. The present complaint of a superabundant and consequently idle and unemployed population, will soon afterwards be not any longer heard of, and in exchange for the produce of her fields exported, the raw materials of many articles of manufacture will be imported and render labour valuable in proportion to its scarcity. The corn laws then must eventually produce the only real wealth of nations, for they will render the people happy in proportion as they furnish to them abundance of productive labour. They will, in short, enrich the empire in general by an extension both of her commerce and of her agriculture. In general seasons many states in southern climates may be supplied with flour and other articles of necessary consumption the produce of the British islands, and we will receive in return either the precious metals, or articles which cannot be produced in northern latitudes. These are only a few of the advantages which encouragement to agriculture at home must eventually produce, and that probably before one generation can pass away, but in the meantime so long as supplies of foreign corn are occasionally rendered necessary here by the elements, the duty charged on its entry for home consumption should never be less than the public taxes charged to our farmers on the same quantity of corn grown at home. All our trading interests are perfectly protected against the interference with them in our own markets by foreigners. The shipping interest is most thoroughly protected, and so likewise is that of fishing even to prohibition. Manufactures of every description are protected by ad valorem duties of from 20 to 50 per cent. according to quality, but, as the corn laws have operated during this last corn season, the duty levied on foreign grain, imported for home consumption, has afforded no protection whatever to the agricultural interest in this country. Admitting the mean value of wheat in this country to be 50s. per qr., then, to place the wheat grower on a level with the manufacturer in this country, the duty on foreign wheat, imported for home consumption, should not be under 15s. per qr., being a charge of 30 per cent. on its value. This duty would eventually be paid by the proprietor of the land on which the wheat was produced, and most certainly never by the British consumer of it. The importer, in making his calculations of the expenses attending the importation of foreign wheat, would place the duty, as he does the freight, sea insurance, metage, &c., among the charges of importation, and his purchases abroad would be made proportionably cheaper. Thus our public revenue might, this last corn season, have been increased by at least two millions and a half sterling, which sum would have been not more than a fair payment on the part of the land proprietor abroad on whose property this wheat was produced for the use of our markets of consumption, and certainly not more than, in various ways, the British grower is

charged with, towards our public expenditure, for the use of the same markets. The benefit, however, to be derived from the corn laws, as they are at present constituted, are rather prospective than immediate. Under various circumstances, such as have occurred during this season, they do not afford anything like adequate protection to the home producer, and seldom indeed can their operations be rendered subservient to financial purposes. Eventually, however, imperfect in some degree, as they no doubt are, they must be attended by beneficial consequences to the community at large, but as these cannot be immediate, the appearances now in the fields naturally must be unusually interesting. The spring, as we have already mentioned, is fully one month later than usual, but the weather has been becoming finer during the last few days, and should it continue to improve the harvest may yet not be so very late as under existing appearances is for the present anticipated. The winter wheats are naturally late, but they are healthy and well spread at the roots, from which congenial weather may yet speedily cause the plants to come away in great luxuriance, for the foundation is abundantly strong for the production of this effect should the weather permit. The breadth in cultivation with winter wheats is considerably larger this season than usual, the high prices obtained in the latter part of last harvest having encouraged the farmers to plant more than their usual quantities. Favourable weather, therefore, may cause an abundant produce of wheat in the proper time, but still a late spring may be followed by a late harvest which is always hazardous if not positively dangerous. Of spring corn and pulse no calculations can be made of their future probable produce in a spring, so much later than is usually the case, as the present one undoubtedly is. The ground has not as yet been in the best possible order for the reception of spring grain seed, indeed for barley in particular it has been much too wet, but it is as yet too early to form any opinion whatever of the probable produce of any description of spring grain, and similar observations must be applied both to the pea and bean crops, for everything now depends on the weather becoming warm and more genial to vegetation than it hitherto has been since the spring commenced.

The principal markets of consumption were never more scantily supplied with wheat of British growth than they have been since the turn of the present year and more particularly during the greater part of the month of April. Only one of two circumstances can have been the cause of this effect. Last year's crop is either nearly exhausted or the farmers must be keeping back from the market a portion of their wheat in hopes of obtaining higher prices for it before the crop now in the ground can generally be brought into the markets for sale. We are inclined to believe that the latter has been the chief cause of the want of British wheat in the market, for certainly in the home counties the growth of last season did not suffer nearly so severely as it did to the northward and in Ireland. Indeed as the weather became more favourable to the growing crops in the last week of April, there was a large increase in the supply of wheat from the neighbouring counties in the London market and prices declined from 5s. to 8s. per qr. according to quality, the demand at that period not being nearly sufficient for the consumption of the quantities offered for sale. Still, however, this state of the market can

only be of short duration, for more than one-third of the corn season has yet to pass before the produce of the growing crops can, by any possibility, be brought forward generally into consumption, and even then large quantities of old wheat may be requisite for mixture with the new. Low prices are, therefore, not very probable for another year at all events, the usual stock in the farmers hands having, as we have already mentioned, been nearly exhausted when the last crop was brought forward for consumption, and that a deficient one by more than one-third of an average produce. This deficiency no doubt has been in part made good by the immense importation which has been made from foreign nations; but still it has not been sufficiently large to place, as yet, the corn trade on a sure footing, or in a healthy state; nor can this beneficial change be expected, until, by one or two good crops at home, the natural state of things be restored, in as far as the supply of the people with food is concerned, for one bad crop universally extends its consequences to the crops of the succeeding two years at all events, and more frequently to the third, and what has been the necessary result of one bad harvest in former years, may very naturally be calculated on for the present occasion. Although the importations of foreign wheat since last summer has been large beyond any former precedent, still the quantity in London at the present time of foreign wheat on which the duty has been paid, does not exceed two hundred thousand quarters, a trifling quantity indeed, to be in granary at this early period of this unusual corn season, and although the quantity yet to be imported before the coming harvest time will probably exceed one million and a half of quarters, still it must all be bonded, unless a material improvement should in the mean time occur in our prices, for at the present high rates of duty it cannot be brought forward into consumption, unless at a heavy loss of property to the importers of it. At the present, or at lower prices, therefore, we must, for four months at all events, depend chiefly on the supplies of wheat furnished in our large markets of consumption by our home growers, and an opinion is very generally entertained, that the supplies from these sources alone, will not be found nearly adequate to the usual consumption: the importers of grain, therefore, are still sanguine of obtaining a fair market here for their property, at considerably lower duty than that now chargeable on foreign wheat, and the wealthy British farmers, who hold back their wheats from immediate sale, are actuated by the same principle, for large quantities will yet be required for the general consumption before the growing crop of wheat can be brought generally into the market for sale; large quantities will also probably be wanted at that period for mixture with the new crop, to render it fit for the miller's purposes, and still a much larger quantity will be requisite to restore that stock in the farmer's possession, which he ought naturally to have at the commencement of every corn season, and which, at all events, ought to be sufficient for three or four months of the usual consumption of the people. At the close of each harvest it is the general calculation, that grain from the preceding crops should remain in the country sufficient for the consumption, during at all events, of the remainder of that year, and that this was not the case last season, the state of the corn trade has since then sufficiently demonstrated, and, unless by a considerable advance in prices, the foreign wheat now

about to be imported be admitted into consumption, the same unfortunate circumstance must occur next season, and increase the general misfortune which has attended last year's deficient crop of wheat, the extent of which cannot be better illustrated than by the quantity of foreign wheat which it has been the means of admitting into our market for sale, amounting as it does at the present period to upwards of two millions eight hundred thousand quarters, and increased, as it will be before the close of this corn season, by a farther importation of another million and a half, perhaps of nearer two millions of quarters. The repetition of importations of corn of such magnitude annually, which the repeal of the Corn Laws would necessarily occasion, would speedily render Great Britain a very poor empire indeed, and would, in no distant period, reduce her to a power of the second standing only in Europe. It would throw out of cultivation a vast proportion of her at present highly cultivated fields, and it would annihilate a property now vested in land, worth from three to four thousand millions sterling. It would reduce the value of the national debt from eight hundred millions sterling to nothing, and her manufacturing wealth would decay as rapidly, and certainly more effectually, than that of agriculture itself. A very few years with an unrestricted and duty free foreign corn trade, indeed, would elapse before the consumers themselves would suffer from the alteration, for the land could not, under such circumstances, be profitably cultivated, and it would return into a state of nature. In a short period the precious metals would entirely leave the country in exchange for food, and universal distress must then ensue. In payment for the foreign grain imported during this season, upwards of two millions sterling in specie have been already remitted to the continent, and twice that sum will yet be required for similar purposes before these accounts can be finally balanced. Very little of this large sum will be sent back here to purchase manufactured goods for the consumption of the inhabitants of those kingdoms and states in which this wheat has been produced. To the Russian, the Pole, or the majority of the Germans, it matters very little whether the crops produced by their labour be good or bad, whether prices be high or low; for in the one case they receive no benefit, and in the other case their situation in life in most instances is so depressed, that no circumstance can reduce them lower. The field labourers there receive little or no advantage from the payments which we are now making for foreign wheat, and their ladies must remain clothed in the same robes as we frequently see them in the streets of London, and these certainly are not composed generally of Manchester or of Glasgow manufactured goods. It is in warmer climates that we can alone find profitable markets for articles of this description, for there we exchange them either for products which northern climates do not permit the cultivation of, or for the precious metals. To the north of Europe there is not one symptom as yet exhibited of any increase in the value of our exports; on the contrary, the present rates of the foreign exchanges clearly prove, that our imports continue to exceed in value our exports; and this contradicts most effectually the only argument which can be brought forwarded in favour of an unrestricted trade in corn with foreign nations; for our manufacturers do not, as a few months ago they fancied they would do, exchange their goods for food received from foreign nations; and, therefore, to injure the agricultural interest at home for expectations so perfectly ground-

less as these are, would be an act of suicide on the part of the manufacturers themselves.

During the last month the markets generally have been rather plentifully supplied with barley, which, however, has been in considerable demand, partly for grinding, but chiefly for malting, and this article has consequently continued to command remunerating prices to the producers. The consumption of malt is considerably larger at present than it was at the same period last year; which is, at all events, so far satisfactory, as it shows that the circumstances of its consumers—and they are the great majority of the industrious classes—are in a progressive state of improvement. Productive employment for them is gradually but surely becoming more abundant, and at present some millions sterling are yearly divided amongst them by the railroad proprietors alone. This money does not leave the empire, but, like good seed planted in a kindly soil, it will soon annually produce abundant returns, and increase the value of land in proportion as it increases itself. With this increasing consumption of barley, however, it is only just to the consumers and fair to the growers of it that the heavy duty now levied on this necessary of life should be very considerably reduced. To the revenue this reduction would be of great importance, for the whole history of our financial system sufficiently establishes the fact, that too heavy duties on any article destroy the object for which they are imposed. At 35s. per qr. of duty malt paid into the treasury annually something under three millions sterling; whilst, after the Duke of Wellington reduced the duty to 20s. per qr., both the duty obtained from it, and the quantity of it consumed were more than doubled. This is a subject of very great national importance. It is equally interesting to the British peer, to the British peasant, and to the British Chancellor of the Exchequer; and nothing can be more worthy of the public attention at the present moment than it undoubtedly is. The land proprietors and their tenants may add from two to three millions sterling to their annual income of barley fields, the consumption of beer may be doubled, and the poor may obtain their share of this, to them, perfect luxury, whilst the amount of duty at present drawn from malt may likewise be materially increased. We are perfectly persuaded that a very short period alone can pass before the undivided attention of all classes, whether they be high or low, will be directed, not so much to the necessity as to the propriety of a still further reduction in the malt tax, and that the manufacturing interest will join that of agriculture, in a session or two of parliament, in petitioning the legislature for a remission at least of one-third of the duty now charged on each quarter of barley converted into malt. To encourage the growth of barley the duties now collected on colonial and on British spirits should likewise undergo a considerable reduction, for, as they are at present constituted, they open a great source for smuggling, in which originates much of the vice at present existing in British society. A reduction of these duties, so far from increasing, would positively decrease the quantity of ardent spirits in consumption under the present system of extravagant duties. No doubt the consumption of home made wholesome spirits would be so very considerably increased by the remission of a portion of the public charge on them, that no loss of revenue would occur from the alteration, but the smugglers' trade would be destroyed by it, because his profits would not then be sufficiently high to remunerate him for the punishment and fine, which he must undergo on detection. We are persuaded that

the lords of the treasury have no comprehension of the extent to which smuggling is at present carried on under the patronage of the excessive duty system, nor of its baneful consequences to the morals of all who pursue this highly vitiating trade. Little less than one half of the spirits now in use pays no duty, nor is it wonderful that two hundred per cent. charged on the first cost, should encourage this most corrupt practice. Besides, it is unfair to the British and colonial distillers, who pay the duty, and who are unable to meet illicit foreign gin and brandy, which pay no duty, in our markets, and it is in an equal degree unjust to the licensed retailer, for he cannot supply families so cheaply as the smuggler can. There is not one interest in the state that would not derive some advantage from the reduction of the duties on malt and spirits. To the lower orders of society it would be of the greatest importance, because it would enable many of them very considerably to increase their own comforts in life, and also those of their families. To the morals of a portion of the people the suppression of smuggling would be of equal importance, in as far as it would deprive them of every temptation to violate the laws of the Excise. It would procure an additional channel of productive employment to the agricultural labourer, and it would improve, in a special manner, the value of landed property, increasing at the same time the revenue.

In the oat trade little alteration is observable since the publication of our last number. The supplies have been large in the principal markets of consumption, but certainly not more so than the demand has required. Prices have not undergone any material alteration during the month, nor has the stock of them sent into granary, during that period, in any material degree been increased. No money has yet been paid for foreign oats entered for home consumption. For this advantage Great Britain is either indebted to the rapidly improving state of cultivation which agriculture is undergoing in Ireland, or that kingdom is indebted to Great Britain for the preference which her produce receives in British markets over that of foreign nations. In either case it is a great national advantage, for the oats grown in England and Scotland are not now nearly sufficient for the consumption, the fields there now being applied to the growth generally of the more valuable crop of Wheat. This fact perhaps forms one of the strongest reasons possible for the continuation of fair protection to British and Irish agriculture. Last year we were supplied with about three millions of quarters of oats from Ireland, which without our markets for consumption, never would have been produced. Here therefore is a clear gain, from the corn laws, of about three millions sterling, in the year 1838, which, under a free corn trade, would have been paid to foreign nations for a similar quantity of oats, forwarded from Leer, Bremen, Emden, and other ports and rivers on the opposite coast of the Continent. But a still greater advantage has been obtained by this circumstance from the productive labour, which the growth of this immense quantity must have afforded to thousands of Irish families. The crop of oats throughout the United Kingdom suffered according to its value fully as much as that of Wheat from the ungenial state of the weather during the last corn season, and yet prices of oats have been kept extremely moderate in all our markets, nor has any necessity existed for any importation of this article from foreign nations. This is a most important circumstance, for the expense of the supply has not gone out of the kingdom, but it has been distributed amongst our own coun-

trymen, and is in a great measure probably again in circulation amongst the industrious classes of British Society, more particularly amongst those who are employed in the different branches of manufactures. Before many years now can pass the cultivation of wheat must increase in Ireland in a ratio, certainly not inferior to that of oats. Indeed it is already making very rapid progress, and then, when any deficiency in bread corn may exist in Great Britain, it may not unreasonably be expected that Ireland may be able to supply our wheat wants, in the same way that she has this season made good the quantity of oats necessary for our home consumption. The manufacturers may expect, that as the cultivation of the land in the United Kingdom increases and improves, the demand for their products must increase in proportion, and the expense of from four to five millions of quarters of foreign wheat, which we either have already paid or must pay to foreign nations in consequence of the deficiency in the last crop, should similar circumstances ever again occur, may, in a few years hereafter, be distributed amongst the agricultural classes in Great Britain and Ireland, by whom it will speedily afterwards be sent into circulation principally in the purchase of various and valuable articles furnished by the manufacturers themselves. This is a certain and valuable market, which the corn laws must eventually throw open to the commercial and manufacturing interests, and will be far more extensive and important to them than any increase can ever be, which their business may draw from a free importation of grain from Russia, Germany, or Poland.

The trade in beans and peas seldom is of sufficient extent to attract the attention of any except those engaged in it. The supply and the demand have during the last month been well assorted to each other, prices have been moderate, and at the same time have afforded a fair return of their property to those engaged in their cultivation. No expectations can yet be formed of the probable result of the ensuing crops of either of these articles. Of the potato crop similar observations may be made. The quality of the last crop continues good, prices extremely moderate, and the supplies everywhere abundant.

We have frequently had cause to remark that on the London corn market those of foreign nations, no matter where they may be situated, revolve. London is the great mart to which all other places look up not only for information, but for the value of the agricultural produce which they grow. Since the beginning of this year this has been more particularly apparent, for from the extremes of the north and Baltic Seas to those of the Black Sea the prices of and the demand for grain have been mainly regulated by the letters received from the Corn Exchange in Mark Lane. From the Black Sea, and from every port in the Mediterranean, very large purchases of wheat have been effected, and large shipments made with a view to the markets in the United Kingdom. The quality however is not very well suited to the consumption of this country. The great proportion of it is *hard*, and our mills are not well constructed for its conversion into flower. However means may be, and no doubt will be, taken to remedy this defect. From the ports of France, Spain and Portugal likewise large arrivals have also already taken place, and large supplies are still to be received. The quality generally however is inferior. From Holland, Belgium, and the ports in the North to Denmark inclusive, the arrivals have been immense, and large ones may yet be looked for before the close of this corn season. Although at the close of last year it was supposed

that the stocks of wheat in the Baltic ports were entirely exhausted, still the event will shew that this has not been the fact, for abundance will yet be received of wheats of the finest qualities from this quarter. We have already stated that from all foreign parts one million and a half to two millions of quarters may very reasonably be expected to arrive in our different ports and harbours, before the growing crops at home can be brought forward generally into consumption.

CURRENCY PER IMPERIAL MEASURE.

	Per Qr.	Per Qr.
WHEAT, Essex & Kent ..red..64	66 68	white ..70 74 78
Suffolk & Norfolk,, ..	64 65	do. 70 72 74
Irish.....	58 60	do.... 62 66
Old, red	68 72	do,... 76 78
RYE	40 42	new.... 44 46
BARLEY, Grinding 32 36 Malting	40 44	Chevalier 44 45
Irish	32 34	Bere ... — 30
MALT, Suffolk & Norfolk	64 66	Brown .. 60 62
Kingston & Ware	66 68	Chevalier 68 70
OATS, Yorkshire & Lincolnsh, feed	24 26	Potatoe ..29 30
Youghall & Cork black 22	23 24	Cork, white 22 23 24
Dublin.....	22 23	Westport 24 25
Clonmel.....	24 26	Limerick 23 28
Londonderry	22 24	Sligo. .. 24 25
Newry	27 28	
Galway.....	21 22	
Waterford, white.....	21 22	Black.. 24 25
Scotch Feed	27 29	Potatoe 29 30
BEANS, Tick.....	37 38	Small 40 42 44
PEAS, Grey.....	34 36	maple.. 34 38
White	38 42	boilers.. 42 44
FLOUR, Town-made	60	Suffolk ..50 52 per sk of
Stockton & Norfolk 50	52	Irish fines 52 53 280 lb.
		Superfine .54 56

Foreign Grain and Flour in Bond.

WHEAT, Dantzic	60	70
Hamburg	60	68
BARLEY	30	32
OATS.....Potatoe	20	— feed 15 to 16
BEANS	30	—
PEAS	24	27
Flour, American.....per brl.	40	42

IMPERIAL AVERAGES.

Week ending	Wheat.	Barley	Oats	Rye	Beans	Peas.
March 8th ..	73 8	38 9	24 3 41	2 37 10	39 2	
15th ..	74 1	39 3	24 4 42	6 37 4	38 10	
22nd ..	71 3	38 1	24 2 37	9 37 2	37 11	
29th ..	68 11	37 8	23 8 39	10 36 9	37 7	
April 5th ..	68 8	37 9	24 4 40	7 36 6	36 8	
12th ..	68 3	38 2	24 6 40	9 37 2	37 7	
Aggregate Average of the six weeks which regulates the duty	70 10	38 3	24 3 40	5 37 1	37 11	
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the Mail of that day from London	10 8	4 10	10 9 9	6 14 0	14 0	
Do. on grain from British possessions out of Europe ..	0 6	0 6	2 6 3	0 3 0	0 3 0	
Foreign Flour, 6s. 5d. per 196lbs. British Possessions, do. 3d. per 196lbs.						

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, April 19, 1839.	AVERAGES from the corresponding Gazette in the last year, Friday April 20, 1838.
--	--

s. d.	s. d.
WHEAT	68 3
BARLEY.....	38 2
OATS.....	24 6
RYE	40 9
BEANS.....	37 2
PEAS.....	37 7
WHEAT	58 9
BARLEY.....	29 10
OATS.....	21 8
RYE.....	31 4
BEANS.....	34 9
PEAS.....	33 3

SEED MARKET.

APRIL 22.

The improvement in the weather has caused an increased demand for red Cloverseed, and a good deal of business has been done since our last, in the value of the article no material alteration has taken place, but the holders evince more firmness and in partial instances a trifle more money was made for fine qualities of English towards the close of the week. The arrivals of foreign have been very small only 81 bags and 79 casks having been received, the former from Rotterdam, and 11 casks of the latter from Hamburg, and the remaining 68 casks from Trieste. The quantity of English brought forward has also been quite moderate. For white seed very little enquiry has been experienced, prices have however been maintained. The Cloverseed trade was about the same this morning as last week. Mustard seed was more enquired for, and brown the turn higher. In Linseed cakes little passing, and fine foreign might now be had at 8*l.* 5*s.* to 8*l.* 15*s.* per ton. Rape cakes may be quoted from 6*l.* to 6*l.* 5*s.* per ton.

CLOVER English, red..	45	70	90	white	50	72	per cwt.
Dutch	—	—	—	—	—	—	—
German	—	—	—	—	—	—	—
French	—	—	—	—	—	—	—
American	—	—	—	—	—	—	—
Tiefoil	—	—	—	—	—	—	—
Rapeseed, English	£31	£36	foreign	£28	£30	per last.	—
Linseed, English sowing ..	—	—	—	—	—	per qr	—
Baltic ..	—	—	crushing	46	48	—	—
Mediterr. & Odessa ..	—	—	—	48	50	—	—
Hempseed, small ..	34	36	large	38	42	—	—
Coriander, new	18	20	fine	20	22	per cwt.	—
Mustard, brown	15	17	white	10	13	per bushel.	—
new	—	—	—	8	12	—	—
Turnip Seed, new Swedes	22	25	other sts.	28	36	—	—
Rye Grass, English	30	42	Scotch	18	40	—	—
Tares, Spring	6s	6d	to 6s	6d	—	—	—
Canary, new	75	78	—	—	—	—	—
Caraway	—	—	—	49	51	extra	53

PRICES OF HOPS.

BOROUGH, APRIL 22.

The Hop market, which has been heavy for some time past, has revived a little during the last week, and and prices are steadily maintained. There is a plentiful supply of inferior and middling Hops, but fine coloured and choice samples are scarce.

	£	s.	d.	£	s.	d.	
Kent Pockets, 1838	4	4	0	to	4	15	0
Ditto choice, do.	5	12	0	—	8	8	0
East Kent pockets, do.	4	15	0	—	9	0	0
Sussex do do.	3	15	0	—	4	0	0
Kent bags do.	4	10	0	—	6	0	0
East Kent do. do.	4	10	0	—	8	0	0
1837's	3	8	0	—	3	15	0
1836's	2	0	0	—	2	16	0

POTATO MARKET.

SOUTHWARK WATER-SIDE, APRIL 26.

The wind being favourable to the arrivals of vessels to the port of London, has brought a liberal supply of Potatoes to the Waterside for the season of the year; they are as follows:—from Yorkshire, 1,728 tons; Scotland, 858; Devons, 562; Jersey and Guernsey, 496; Kent, Essex, and Suffolk, 262; making in all a total of 3,906 tons. The market being nearly cleared of former arrivals, and most of the above being fresh shipments, and arriving in good condition, has caused a steady demand during the past week, and the prices quoted in our last maintained. Superior samples continue to be much in request.

Per Ton.	Per Tons.
York Red	80s to 90s
.. Kidneys	—s .. 80s
Scotch Red	...70s .. 75s
Late Devons	...75s .. 80s
Jersey & Guernsey	—s .. 60s
Blues	—s .. 60s
Kent, Essex, and	Suffolk Whites .. 60s .. 70s
Kent Kidneys	—s .. 80s
Lynn do.	—s .. 70s
Yorkshire Shaws,	for Seed
	—s .. 60s

WOOL MARKETS.

BRITISH.

Per lb.	s.	d.	s.	d.
Down Teggs	1	8	to	1, 8½
Half-bred Hogs	1	8	—	1, 8½
Ewes and Wethers	1	4½	—	1, 5½
Blanket Wool	0	8	—	1, 1
Flannel do.	1	0½	—	1, 4½
Skin Combing	1	2	—	1, 4

LIVERPOOL.

SCOTCH, April 20.—We think there has been less business done in Laid Highland Wool this week, but the stock is now so reduced that the transactions must be necessarily limited, till the new clip comes forward. There is no alteration to notice in regard to cross and cheviots, the demand being limited. Quotations as before.

Per Stone of 24lbs.		s.	d.	s.	d.
Laid Highland Wool, from	...	11	6	to	12
White do.	do. (scarce)	0	0	0	0
Laid Crossed do.	do.	13	0	14	0
Washed do.	do.	15	0	16	0
Laid Cheviot, do.	do.	15	0	18	0
Washed do.	do.	20	0	23	0
White do.	do.	33	0	35	0

FOREIGN.—A considerable business was transacted this week by private contract in Russian, Peruvian, and other low wools, which realised full prices. The late public sale was well attended, and the bids were more spirited than was generally anticipated. Of 300 bales Portugal Wool which were offered, the greater portion were sold at 16½*d.* to 20*d.* for R., and 12*d.* to 15*d.* for low marks. The Roman fleece and lamb wool brought from 16*d.* to 18*d.*, but nearly all the Zegay and Turkey were withdrawn. Arrivals this week, 81 bags; previously this year, 21,507 bags: total, 21,588.

FOREIGN.

APRIL 22.

Owing to the market being, comparatively speaking, somewhat scantily supplied with fine Spanish and German wools, the demand for them has become steady, but not to say brisk, and last week's quotations are well supported. In other kinds of wool exceedingly little is doing, at barely late rates. The imports, since our last, have comprised about 850 packages from various quarters.

Electoral Saxony wool, from 4*s.* 6*d.* to 5*s.* 2*d.*; first Austrian, Bohemian, and other German wools, 3*s.* 4*d.* to 4*s.* 4*d.*; second do., 2*s.* 4*d.* to 3*s.* 2*d.*; inferior do. in locks and pieces, 2*s.* to 2*s.* 6*d.*; German lamb's do., 2*s.* 0*d.* to 3*s.* 0*d.*; Hungarian sheep's do., 2*s.* 2*d.* to 3*s.* 0*d.*; Leonese sheep's do., 2*s.* 4*d.* to 3*s.* 0*d.*; Segovia do., 1*s.* 10*d.* to 3*s.* 0*d.*; Soria do., 2*s.* 0*d.* to 3*s.* 2*d.*; Caceres do., 2*s.* 2*d.* to 3*s.* 0*d.*; Spanish lamb's do., 1*s.* 8*d.* to 2*s.* 8*d.*; German and Spanish cross do., 2*s.* 0*d.* to 3*s.* 2*d.*; Portugal sheep's do., 2*s.* 0*d.* to 3*s.* 2*d.*; do. lamb's ditto, 1*s.* 6*d.* to 2*s.* 0*d.*; Australian, fine crossed do., 2*s.* 0*d.* to 3*s.* 6*d.*; do. native sheep's do., 1*s.* 6*d.* to 2*s.* 7*d.*; Van Diemen's Land, native sheep's do., 1*s.* to 2*s.* 4*d.*; and Cape of Good Hope do., 1*s.* 4*d.* to 3*s.* per lb.

Wool on which the Home Consumption Duties have been paid at London, Liverpool, Bristol, and Hull, during the last week:—

WOOL.	This Year, previous to last week.	Same time in the last Year.
Spanish, London	lb. 622672	693680
Australian, do.	lb. 697589	259225
Other Sorts, do.	lb. 3519183	2835108
Liverpool	lb. 2875666	2479622
Bristol	lb. 23300	4000
Hull	lb. 2933251	2295025

IMPORTS OF WOOL.—Quantity of wool entered at Hull for Home Consumption, during the week ending April 11.

From Hamburg	358,447 lbs.
From Antwerp	8,320

Total 366,767 lbs.





THE FARMER'S MAGAZINE.

JUNE, 1839.

No. 6.—VOL. II.]

[NEW SERIES.

THE PLATE.

The subject of our first Plate is a short-horn Bull, "Roderick Random," bred by R. W. BAKER, Esq., of Cottesmore, Rutlandshire, taken from a Painting by W. H. DAVIS, of Chelsea. This Bull was by "Gainsborough," has been exhibited nine times at the Rutland, North Leicestershire, Bourn, and Grantham Agricultural Societies' Shows, and upon every occasion, the first prize was won by this animal. Too much praise cannot be awarded to Mr. BAKER for the exertions which he has made in improving the character of the stock and the system of cultivation in the district in which he resides. He has, it is true, many able and zealous coadjutors labouring in the same field, but he was the first to move, and since he put his hand to the plough he has not looked back. At the suggestion of a friend, we requested him to furnish us with a list of the prizes which he has obtained; with which request he has obligingly complied. We trust that the success which has attended his perseverance will stimulate others to follow so good an example.

LIST OF PRIZES OBTAINED FOR ANIMALS BRED AND EXHIBITED BY R. W. BAKER, ESQ.

Cottesmore Agricultural Meeting, Sept. 1831 ..	A Silver Cup, value £10, presented by Sir Gilbert Heathcote, Bart., M.P., for the best cultivated Farm in Rutland	£ 10	s. 0
	A Silver Cup, value £5, presented by Sir Gilbert Heathcote, Bart., M.P., to the Owner of the First Prize Plough in Class 2..	5	0
Oakham Show, Dec. 5, 1831 ..	To the Breeder and Feeder of the best Ox, First Prize First Class	5	0
Oakham Show, Apr. 2, 1832	For the best Bull, First Prize—"Gainsborough"	5	0
Oakham Show, Dec. 1832..	For the best Bull, First Prize—"Gainsborough"	5	0
	For the best Fat Ox, First Prize First Class	10	0
	A Sweepstakes for the best Ox in the Show	2	0
	For the best Fat Cow, First Prize—"Baroness"	2	0
	For the best Pig, First Prize	2	0
Cottesmore Ploughing Meeting, 1833	A Silver Medal, presented by William Leake, Esq., to the Owner of the First Prize Plough, in Class 2	2	0
Rutland Agricultural Society, Dec., 1833...	For the best Fat Ox, First Prize First Class	15	0
Smithfield Show, Dec., 1833.....	Oxen or Steers of any breed, age, or weight, without restrictions as to feeding, First Prize First Class	20	0
	Silver Medal as the Breeder	2	0
Cottesmore Ploughing Meeting, Sept., 1834..	A Silver Medal, presented by William Leake, Esq., to the Owner of the First Prize Plough in Class 3	2	0
Smithfield Show, Dec., 1834.....	A Silver Medal to the Exhibitor of the best Beast in Extra Stock ..	2	0
Rutland Agricultural Society, Dec., 1834.....	Oxen or Steers, without restrictions as to feeding, First Class, Second Prize	7	0
	To the Owner of the best Five Open Heifers, of any breed, under two years of age, First Prize, Class 14.....	10	0
	To the Owner of the best Bull, under 18 months old, First Prize—"Roderick Random"	5	0

	The best pair of Mares, of any breed suitable to the Agriculture of the district, First Prize, Class 18—"Two Suffolks"	£	s.
	For the best Colt Foal ditto, First Prize, Class 18—"Suffolk"	2	0
Lincolnshire Agricultural Society, 1835	For the best Bull, under three years of age, First Prize—"Lindsey"	3	0
Rutlandshire Agricultural Society, Dec. 1835 }	Oxen or Steers, of any breed or weight, under five years old, not having had oil, oil cake, meal, &c. &c. previous to Feb. 1, 1835—"A Strawberry, four years and two months old, by Gainsborough," Class 2	5	5
	Cows or Heifers, under five years, of any breed, age, or weight, without restrictions as to feeding—A white Heifer, by 'Gainsborough,' Class 5	10	0
	For the best Ox, bred in the district, Class 4, by 'Gainsborough' ..	7	0
April, 1836	To the Owner of the best Bull, First Prize—"Roderick Random" ..	10	0
Grantham Agricultural Association, Oct., 1836 }	To the Owner of the best Bull, First Prize—"Roderick Random" ..	5	0
	For the best Milch Cow or Heifer, Second Prize—"Graceful"	2	0
	The best Heifer, under two years and six months old, First Prize—"The Neat One"	2	0
Rutland Agricultural Society, Dec., 1836	For the best Ox, under five years of age, Class 2, First Prize	10	0
	For the best pair of Steers, under two years of age, Class 7, First Prize—Pair of Steers by 'Roderick Random' 13 months old	5	0
	For the best Cow in Milk, Class 16, First Prize—"Watts"	5	0
Rutland Agricultural Society, April, 1837	For the best Bull, First Prize—[This Prize was won by Sheridan; Sheridan was <i>withdrawn</i> , and then the above Prize was won by "Roderick Random"]	7	0
Bourn Agricultural Society, 1837	For the best Ox, under four years of age, First Prize, Class 2—"Barberry Ox"	8	0
	For the best Cow or Heifer, under four years old, Class 4, First Prize ..	5	0
Cottesmore Meeting, September, 1837	Owner of the First Prize Plough in Class '2	5	0
Waltham & North Leicestershire Meeting, Oct. 1837	Class 1.—Owner of the best Bull, any age or breed, First Prize—"Sultan," seven months old	3	0
	Class 2.—For the best Milch Cow, Second Prize	1	0
	Class 3.—For the best Heifer, under three years of age, First Prize ..	2	0
	Class 5.—For the best Steer, under three years of age, First Prize ..	2	0
	Class 6.—For the best Steer, under two years of age, First Prize ..	2	0
Rutland Agricultural Society, Nov., 1837	Class 5.—For the best Cow or Heifer, under five years of age—"The Neat One," by Gainsborough, dam Watts, three years and five months old, First Prize	7	0
	Class 7.—For the best pair of Steers, under two years of age, First Prize—One year and eleven months old, by 'Roderick Random' ..	5	0
	Class 17.—For the best Cow in Milk, First Prize—"Graceful" ...	5	0
	Sweepstakes for the best Beast—"Neat One"	3	0
	Ditto Cow—"Graceful"	2	0
Smithfield Show, Dec., 1837	Class 6.—For the best Cow or Heifer, under five years of age, First Prize—"The Neat One"	15	0
	The Silver Medal as the Breeder	2	0
	The Gold Medal as the best Beast in any Class	5	0
Waltham, Jan., 1838	For the best four years old Hunter, First Prize—"Juniper Colt" ..	20	0
Rutland Agricultural Society, March, 1838	For the Owner of the best Bull, First Prize—"Roderick Random" ..	7	0
	Ditto Second Prize—"Sultan"	3	0
Bourn, Sept., 1838	Class 1.—Best Ox, First Prize	5	0
	Best Bull, First Prize—"Roderick Random"	5	0
	Pair of Steers, under three years, First Prize	5	0
Waltham, Oct., 1838	Class 1.—Best Bull, First Prize—"Roderick Random"	3	0
	2.—Best Cow, First Prize—"Watts"	3	0
	4.—Best Heifer, under two years, First Prize	2	0
	5.—Best Steer, under three years, First Prize	2	0
	6.—Best Steer, under two years, Second Prize	1	0
	Sweepstakes—Best Bull, as in Class 1	3	0
	Best Steer, as in Class 5	2	0
Rutland Agricultural Society, Dec. 1838	Class 4.—Four year old Heifer, First Prize	7	0
	6.—Pair of Steers, under two years, Second Prize	2	0
	18.—Heifer, under one year and five months, First Prize	5	0
	19.—Heifer, under two years and one month, First Prize	7	0
	20.—Pair of Steers, First Prize	7	7
	21.—Milking Cow, Second Prize—"Graceful"	2	0
	Gold Medal for the best Beast in the Show—"Barberry Ox," by Gainsborough	5	5
Rutland Agricultural Society, March 25, 1839. }	For the best Bull, of any age or breed—"Roderick Random"	7	0

ON CULMIFEROUS CROPS.

(ORIGINAL.)

Having in some former papers stated the common method of cultivating the green crops now used, esculent and herbaceous, I proceed to give an account of our grain crops, which with that of the artificial grasses used in the alternate and pasturing rotations, will include the crops now cultivated in our system of arable farming, as the most profitable and best suited to soil and climate.

Wheat belongs to the genus "*Triticum*," of class and order, "*Triandria Digynia*" of Linnæus, and to the order, "*Gramineæ*" of the natural systems. From what country, or when our cultivated varieties have been imported, has not been ascertained, and would be useless if known; for though we possess them in a wild state, it is evident that no artificial cultivation we can bestow would raise any of them from the wild to the cultivated state. The varieties of wheat are numerous, differing not a great deal in quantity or quality of produce, admitting of the same mode of cultivation, and used by farmers as much from caprice and fashion, as from any incontestible grounds of superiority. It has been satisfactorily settled, however, that the white wheats are finer in quality than the red, the other primary distinction of the genus, and that they are more adapted for good lands and early climates. A variety of the red, called creeping wheat, is much used on poor soils and in late latitudes, and in Scotland and in the North of England; spring varieties are much esteemed both of red and white, and which are evidently derived from winter wheats by late sowing, and by persisting in using the produce of that sowing. Of late years much has been said and written about some new varieties, which had proved much superior to those already known, both in quantity and quality of produce. Nature has fixed a limit in soil and climate, beyond which production cannot advance, and a limit seems also fixed to human exertions in endeavouring to reach the utmost power of production. A plant may be forced to an uncommon increase on an artificial hot-bed or by some casual circumstances—but how is this hot-bed to be generally procured? plants raised by such means when submitted to the test of the ordinary and available means of cultivation, will become acclimated, and range themselves under the standard of production allowed by soil and climate. A repetition of this test alone can determine the usefulness of such introductions. A great quantity of any article with a corresponding quality, seems in a great degree incompatible, an over production may be forced by artificial means even to a great loss, and it seems a fixed law in the animal and vegetable world that bulk does not carry with it a proportionate quality. Quantity and quality together, form the excellence of any article, and though the latter be ever desirable, yet the difference must be very great before it can supply the loss of quantity for common use. If with our known and available means of cultivation, we can produce equal quantity with a superior quality, a great improvement is effected, if we raise a less quantity but of a better quality, it remains for that quality to make up for the loss of quantity; and if we can with the same or additional means, produce both greater quantity and quality, or a greater quantity with equal quality, we will have made a great step in advancing to the limit of pro-

duction from which we are yet very far distant. Such results can be gained only by long and laborious investigations, and experience, in our present day, and circumstances. Quantity seems the chief object, and to attain this point, it would appear the more judicious method of proceeding to try to increase the quantity with the same quality by raising a greater number of articles rather than force a few to an overgrown state, for a plant or any other article raised by forced means, is not so useful or beneficial as if the means had been applied to a greater number. A great variety of different circumstances concur in ruling all such applications, and in the present case of new plants can be determined only by time and experience.

In our present systems of cropping, wheat is sown in autumn on a well prepared summer fallow, and on a clover ley, bean or pea stubbles, and on land from which green crops have been removed or eaten on the ground during winter, and the spring varieties are sown till the end of March. One ploughing is in all these cases sufficient, with three or four times of harrowing. Sowing by broad-cast or by drilling, is practised according to the nature of the soil and other circumstances, stiff clays prohibiting the use of the drill, while drier loams admit of its full benefit. The manure is generally applied to clay fallows during the latter part of summer, and the land is seed furrowed and sown in October with all possible dispatch. It is preferable to sow close up to the ploughs, at night, the land ploughed during the day, or during that and the previous day, and even to water furrow the same, and to finish as far as possible the process; for such is the precarious nature of these soils, that every advantage must be seized, and if a season be once lost, it can never be regained that year. The double mould board plough makes the neatest work in water furrowing, but in wet seasons, the resistance is too great, and the common plough is used, and passes once or twice along the furrow. The headlands being ploughed, sown, and harrowed, and the common plough having passed along the outside furrows next the ditches, and also along the inside furrows of the headlands, and the cross cuts being also drawn with one or more furrows to facilitate the cleaning by the spade, that no water be allowed to stand during winter, the whole process is finished. Much attention is required in drawing and deepening these cuts especially on uneven surfaces; in such situations, time and labour are requisite to lay the land dry by every means, however awkward or circuitous; in other cases, little more is necessary than to observe that no obstruction remains in the water-furrows, and to provide a sufficient outlet for it at the end of the field. The same mode of proceeding is followed in sowing on bean and pea stubble, tare grattans, and on clover leys, where wetness prevails, to sow, harrow, water-furrow, cut, and finish with all possible dispatch, to lay the land ready for the changes of that precarious period of the year in our variable climate. On the dry loams of our eastern counties, little more is required than to plough and sow; a harrowing precedes, and follows the operations of the drill; and there is not in our island a more beautiful specimen of farming to be seen than the drilled wheats in Norfolk, the rows straight as a line, and not one stray pickle. But the soil and climate are particularly favourable for that operation; in other cases, drilling both by machine and by "ribbing" with small ploughs has been discontinued for se-

veral reasons. In that application, as in every other, circumstances must direct.

Wheat lands are seeded with from 2½ to 4 bushels per acre, and it should be selected from the best and cleanest grain to be found. Much exertion is at present being made by distinguished individuals, to improve our varieties of wheats by cultivation and classification; but great advantages may be in the meantime derived by the farmers picking the sheaves of the crop intended for seed, and above all, by cleaning it entirely from the seeds of weeds. Good crops have been obtained by using inferior grain for seed, but we may suppose that the inferiority had not been confirmed by long standing, and that upon meeting with a favourable soil from cultivation, the primitive qualities had returned.

In the proceedings of nature during the many varied processes of production, and of re-production from natural and artificial cultivation, there is much of an intricate and of an inscrutable nature, both in the animal and vegetable world, but isolated cases cannot furnish a general rule, and we must adhere to what time and experience has settled and confirmed. It is generally understood and recommended that all the Cereal crops be cut before dead ripeness; not so soon as to shrivel the grain, but to allow it to harden after it is cut, instead of acquiring that quality when standing. I am satisfied, from experience, that in the case of wheat, the quality is much finer, and several millers certified the fact; the time of cutting must be chosen when the grain is fully formed, and has acquired so much consistency as not to shrink but harden when cut. Wheat is usually ripe in August, and is cut with sickles, and tied into sheaves, with bands made of a quantity of itself, twisted together by a knot, and set up to dry in shocks of twelve sheaves each; in wet climates two sheaves are laid on as hoods, and assist in keeping dry the inside sheaves. When dry enough for keeping, the crop is carried to the stack-yard, and built in square or round stacks, and threshed during winter, as convenience requires; by flails it costs 3s. to 4s. per qr.—by horse-machinery from 1s. to 1s. 6d., and by wind, water, or by steam, from 6d. to 10d. Being passed twice through a fanning machine, or once if the crop be clean, and chaffed by machinery, and then measured up into bags of two or four bushels each, it is ready for delivery in the market. Wheat is a scourging crop, and consequently an expensive one; on a summer fallow, and exclusive of rent and taxes it will cost, at an average, from 3l. to 10l. per acre, according to the price of manure and local distances; the expence of fallowing and manuring should not be wholly charged to the first crop—one-half would be a fair mode, and the other half apportioned in a decreasing ratio among the other crops of the rotation. Much of the prejudice against green crops has arisen from this original expence, which may be very easily removed by the simple consideration of whether the subsequent crops could be so productive without that crop as a preparatory process? The answer is obvious; but such a belief remains in spite of experience, and acts very prejudicially.

In our island, wheat is subject to the diseases called “black brand,” (*ustilago frumenti*) to yellow ochre, rust or mildew, and to “black ball or smut.” The first-mentioned is not much known, and it is yet uncertain if the rust or mildew proceeds from the root or from the atmosphere. I was personal witness to a fine crop in Northumberland being affected near the hedges, and in a zig-zag direction over the field, while the other parts remained unhurt. In this dis-

ease the partial calyxes are occupied with the yellow substance which seems to detract the support intended to mature the grain, and the pickles become shrunk and shrivelled. It was long thought that the Barberry plant communicated a similar disease to wheat, but it appears where no Barberry was ever known. In certain seasons and situations a kind of flies have of late years inflicted a partial injury on the wheat crops, by occupying as a nest for its larvæ the bed of the pickle, these injuries evidently resulting from the peculiarities of the seasons; it never may be possible for human power to find any preventive. Luckily the ravages are not extensive. The black brand and black ball or smut, are very different, but have been often confounded by scientific men. The last mentioned is the most fatal, and is much more constant, and not so much dependent on seasons and other circumstances as is the first-named. It is more prevalent, however, in some seasons, and on certain soils than in others, and in a wet climate more than in a dry. In the black brand the pickle is converted into a dry black powder, as if it had been roasted, and the culm is affected in all its parts. In black ball or smut, the pickle is converted into a round globule, with a thin black, greenish, and often transparent covering, and filled with a damp, brownish, fætid powder. The black brand powder flies off without communicating any noxious quality from adhesion, but the smut powder sticks to sound corn, and when broken communicates an odour easily discovered by our millers, and consequently diminishes the value of the grain. Like many other appearances in the natural world, it has greatly disappeared before improved cultivation, and a disease thus diminishing the crop in quantity from the affected grain, and also from spoiling the sound part by its contact, would naturally be much observed, and a cure or a preventive be eagerly sought. No appearance in the vegetable world has more completely baffled the investigations of science than this one of smut, for we find sound and diseased ears on stalks proceeding from the same root, and smutted and sound grains on the same ear. In the case of black brand we see the ear “wholly” converted into powder, and the stalk and leaves affected and shrivelled, and different from others. This appearance seems comprehensible by our limited understandings, to see a plant wholly destroyed, but it seems inconceivable by any process of human reasoning how some parts of a plant can be spoiled and others perfectly sound from an affection proceeding from the root, or from the atmosphere, no cause of affection being visible as in the case of flies, depositing from their larvæ. Sound grain has been carefully infected with smut powder, and has produced the same phenomenon—sound and spoiled grain on the same ear, and growing from the same root. If the affection proceeds from the root, it is natural to expect the whole stalk or stalks that proceed from a diseased or infected pickle would be spoiled, from the food being vitiated, if it proceeds from atmospheric causes, it is alike incomprehensible how some pickles are diseased and others not. Experience has most certainly established the fact that corrosives are a great preventive; but we are alike ignorant of the manner in which they act, in not preventing the disease from the same root, and how the preventive quality is conveyed from the root by the stalk to the ear, and how it preserves some pickles and not those adjoining on the same ear. Every thing that has been broached in trying to investigate the nature and causes of this disease has failed, and we must content ourselves with what time and observation has furnished to us. Mr. Somerville advanced a very plausible theory,

that insects took possession of the calyx, and caused the putrid decomposition; but experiment completely overturned it, and I have myself repeatedly fired the balls by means of a concave lens, but never could discover with a microscope the very smallest appearance of the animaculæ he described as resembling wood-lice in shape. The ball consumed slowly, and emitted a very foetid odour. The opinions of Jussieu, Bauer, and Davy are alike inconclusive; if they were proved to be correct, they all leave untouched the incomprehensibility of sound and smutty grain being found from the same root and on the same ear.

Tull has related that the use of salt brine as a steep was discovered by the sowing of wheat that had been sunk in a ship near Bristol, which escaped smut when nearly all the wheat in England was infected. From this circumstance an inference would be drawn of the use of other corrosives; and accordingly we find many used, one of the more efficacious of which is, stale urine unmixed, in which the grain is immersed, and then encrusted with quick lime, and sown immediately. In our southern counties little or no preparation is necessary; but in wet climates smut will prevail, notwithstanding every caution, and a frequent change of seed from more favoured countries is absolutely necessary. The means already known, if not a perfect cure, will yet, if properly used, prevent the disease from materially affecting the value of the crop. For a more particular account of the different opinions on the cause of smut, of the various cures proposed, and of the preventives now used, I refer to an article I published some years ago, and which will be found in the number of this Magazine for May, 1838.

BARLEY

belongs to the genus "*Hordeum*," of class and order "*Triandria Digynia*" of Linnæus, and to the natural order of "*Gramineæ*." The cultivated varieties of this plant are not very numerous; the two mostly used are the two-rowed and the four-rowed, the latter being of a coarser quality, but more productive than the former on poor soils and in late climates. A variety called "*Chevalier*," much praised for some years past, is now on the decline, for the reason I have mentioned—that a forced growth will soon be reduced, and that such sub-varieties are wanting in the persistent perennial quality necessary to constitute a plant of certain production. But if the plant, after being so reduced, yields a produce or a quality superior to our known varieties, an improvement will be effected which time alone can establish.

Barley is universally sown on land well cleaned and manured for green crops, at the rate of three bushels per acre by drill or broadcast, in March or April, as the weather permits. One ploughing is sufficient with two or three times of harrowing, and one rolling with the grass seeds. In some few places the old method may be yet seen of ploughing, scuffling and working the land for barley—the remnant of prejudice and of a mode that prevailed before the introduction of green crops. If the land be foul, no cleaning can be effected at that season of the year, and a deeper and a finer tilth can be obtained by one furrow quickly executed than by exposing the land to vicissitudes of weather. In cases of dry loams and sands, the custom is most pernicious in dissipating the moisture by exposure, and in loamy clays by drought, forming a clod which cannot be reduced even with much time and labour. In some parts of England it is customary to plough the land into ridges the previous autumn, that it may be mel-

lowed by the frosts and thaws of winter, and to scuffle in the barley in the spring. A "stale tilth" is here an objection; but ploughing retentive soils at a critical season is avoided, which uncertainty may soon be removed by our modern system of close draining. In the sowing of barley, the seeding and harrowing should be close at the ploughs; in dry lands, to prevent evaporation, and in soils where clay is an ingredient to prevent the drought forming a clod which no subsequent harrowing and rolling may be able to reduce. The roll must follow close behind if the season be favourable. To obtain the grand object of despatch in getting the crops sown and the lands lying as short time as possible at the mercy of the season, combination of force is the indispensable requisite—a point in which many cultivators are yet very deficient. In order to preserve the moisture on dry lands, it has been proposed to scuffle in the spring instead of ploughing; but this plan would afford only a few inches of stirred earth, which the drought would quickly penetrate; the bottom would be firm and impenetrable to the roots of the plant, and I have ever preferred to have a loose bottom of fresh stirred earth, with a level surface from rolling, to retain moisture and exclude the drought, rather than have a few inches of loose dry surface, with an unstirred and impenetrable bottom. Barley will suffer no poaching or plunging of the land from sowing without being seriously damaged; and necessary as despatch is at all times, it is doubly so for that very reason in the sowing of barley. On large farms it can be sown immediately as the land is ploughed, by a sower and a pair or two of harrows working among the ploughs; and a cross rolling must follow without delay, even though it be necessary to turn in the middle of the field. On a smaller scale, the sowing may go on every afternoon; and on a smaller scale still, on every second day. The grass seeds are sown (most properly by machine) on the flat surface, and harrowed in, and, if necessary, a flight roll may be again applied, provided the land be not of a quality to get hard, or "encrusted" by a heavy rain on a level surface; for such a circumstance is death to a barley crop. The water furrows, if any be necessary, being drawn by the double mould-board plough, and the common plough having passed round the outside furrows of the field, and the inside ones of the head-lands, and having drawn the cuts, if any be required, the process is finished. On dry lands no water furrows are required, and the work is shortened. A delay often happens in sowing the grass seeds: on dry soils no evil may ensue; but, if the season continue favourable, it will be found most advantageous to finish every operation before quitting the field. A very general mistake is committed by our cultivators in using rolls of too light weight; and I have ever been of opinion, that the success of the Holkam farming on light soils may be as much attributed to a contrary practice as to any other circumstance. The largest roll on a farm should not be under 15 cwt., with another of 6 or 8 cwt., and a turnip drill roll. Great advantage is derived from the use of a heavy roll on all soils, used at proper seasons and with discretion.

Barley, when ripe, is cut by sickle or by scythe, tied and set in shocks as wheat, and stacked in a similar manner, or dried by turning, and stacked loose like hay. The awny spike and spongy straw retain wet and moisture more than any other of our Cereal crops, and barley is consequently more liable to sustain damage by heating in the rick. It is threshed by machinery or by flail, and the awns are usually separated from the pickles by passing the

threshed grain between the fluted rollers of a threshing machine, or by means of square iron bars with sharp edges being applied by hand of man to the grain lying thinly on a floor. An upright cylinder has been lately fixed to our threshing machines, and driven by a crown wheel on the end of the axis of the scutching cylinder. The threshed grain is put in at the top, and, by passing downwards, the ears are knocked off by sharp knives, placed in a zig-zag manner inside the cylinder, during the rapid revolutions. Being then passed once or twice through a fanning machine, and measured into bags of three or four bushels, it is ready for delivery. The returns of barley will vary from three to eight bushels per acre, according to soil and cultivation. Gravelly soils produce the best quality. The uses of barley are well known, for malting and for grinding, and, at one time, for bread; but both barley and oatmeal are now disappearing before the better article of wheat.

OATS

belong to the genus "*Avena*," of the same order as wheat and barley. The cultivated varieties are numerous: the potato and Poland oat are preferred for rich loams and fens; and a number of others of various names are preferred in different localities for producing straw and grain. The white and black "*Tartarians*" are undoubtedly the most productive both of straw and corn on inferior soils, but the quality of both is inferior. A number of white varieties prevail under different names, and in Scotland and in Ireland we find several varieties much used on account of the quality of the grain for oatmeal. Oats like damp loams and a moist climate, and hence we find the greatest produce in Scotland and in Ireland; the dry forward climate of the southern counties not allowing sufficient time for their growth. They are most generally sown on lea, with one ploughing, and in the northern parts of the kingdom they very frequently take the place of barley in the spring on turnip and potato lands, and even on summer fallows, when the treatment is every way the same as that of barley. On lea five or six times of harrowing is usually sufficient, and when the land is in ridges of equal breadth, the last time lengthwise is often given with the horses walking in the furrows with a tree stretching over the ridge to which the horses are attached. In harrowing wheat lands in wet seasons, great advantage is often derived from this mode, and in sowing of barley, and in all cases of sowing grass seeds, where the tree may be long and light for the purpose. In harrowing grain crops, it is a general rule that the work is well finished when the holes made in the land by the horses' feet are completely filled up with the dry loose mould; but this rule though very just, depending on circumstances over which we have no control, is often broken through from necessity, and the crops must be sown as they best can. Farmers are often too sparing of labour in harrowing oat land: a fine tilth is most essentially necessary for the growth of any crop, and as in this case none can be produced by the plough, there is the greater necessity for a liberal harrowing. The roll must be once or twice applied soon after sowing, or before the crop is too tall to "break or nip" below the implement. Thistles and tall weeds must be cut out or pulled by hand.

A furrow of nine inches in breadth and six in depth has been fixed as a medium by many eminent practical men, and that in ploughing lea or turf for crop, the furrow be laid at such an angle as that the part cut by the coulter and share may lie perpendicular, and afford a narrow and deep "comb or slice" to the harrow tines for the purpose of covering

the seed. The narrow slice is produced by a close set of the coulter and share; if they be set wide a round shoulder is cut, if the furrow be set too upright the harrow tines must work on the flat surface cut from the land side, and if it be too much reversed the under part of the furrow is laid up and also affords a flat surface to the harrow tines. The slice being deep and narrow, more soil is procured than by a flat surface, and the furrows must be laid at equal heights that the harrows in passing lengthwise and across may catch every "comb or slice," and produce a level surface of pulverization. The success of crops depends in a great measure, if not wholly, in the decomposable vegetable matter in the soil, and in the case of oats on the decomposition of the roots and of the grassy sward. On our poorer soils the sward of grass and of the crop of oats bear a direct ratio to each other, and experience has fully confirmed the fact of all crops succeeding best when they have a lea clod and a vegetable freshness in the soil to which they are consigned. The analysis of soils before and after severe cropping has shown that the only diminution takes place in the quantity of vegetable matter, and this fact being fully proved both by science and practice, it seems a very natural inference to suppose that every advantage would be taken of our knowledge on this point in order to afford to the soil the greatest quantity by every possible means. But we see a practice in direct opposition to it—corn crops repeated and no rest afforded for acquiring freshness and matter of which the soil has been robbed. To this circumstance of the land acquiring freshness from rest in pasturing and from the matted grassy sward by future decomposition, is to be ascribed the success of the oat crop, and more especially of the turnip crop, on our secondary soils subjected to the pasturing system. On the other hand we find the best land on farms kept in a state of "old turf," where the richness acquired is of comparatively little use; the herbage is in a state of decay, and no opportunity is afforded by cultivation or a change of plants of deriving the benefits of it. The other part of the farm is completely robbed of this freshness by constant ploughing and cropping, and in the case of some inferior lands they are left in a state of nature, as incapable of paying the expense of cultivation either in the shape of perpetual turf or of perpetual cropping. Of this fact, that vegetable matter and freshness is the great desideratum, our farmers are fully aware; and many very frankly confess it, and at the same time act in direct opposition—a lamentable instance of the power of prejudice and custom over the most convincing and confirmed experience. Though we are fully aware of the great benefit of a fresh turf in producing crops, we still neglect to form it, and keep a "turf" of old grass of no use whatever to any crop as no opportunity is afforded. This is one of the many anomalous beauties of our scientific farming.

Five bushels of oats to an acre may be taken as an average seeding, and the produce will vary from three to eight quarters according to soil and cultivation. The crop is usually mown and stacked loose like hay, or tied into sheaves after the scythe. Mowing is now very fast superseding the sickle, the latter method though making the neatest work, has been long found very objectionable in wet seasons. The sheaves when tied resemble a compact bundle of osier rods tied together, and when once thoroughly wetted, require a considerable time before they are again dry, and it often happens that they are all untied and laid open. By mowing, the sheaves are much looser, and it has been found by experience that the crop is fit to be carried fully a week before

that cut by sickle. Mowing may also supersede the old mode of tying slack and setting up single sheaves for eight or ten days, and then tying and setting the crop in stacks of twelve sheaves each. The expense of mowing is rather less than by the sickle and more straw is obtained. Oats are threshed by machine or by flail, and after being passed through a fanning machine, they are ready for the market as horses' food, almost the only purpose to which they are now applied. In Ireland and in Scotland, a portion is still converted into oatmeal. No disease of any consequence attacks oats and barley in our island, the "black brand" may be seen in hot seasons in some of our barley varieties, "segging," or falling has also been seen among oats in peculiar situations, but none has yet appeared to constitute a general disease.

Rye, or "Secale Cereale," is the most productive on hot burning sands, and is sown in the autumn with one furrow and the usual harrowing. It is used also as spring feed for sheep. It is sometimes sown mixed with wheat, and the produce is called "Maslin," and is much used for bread. The produce and value of rye is much the same as barley, the straw is always greater in bulk. A disease called "ergot" attacks rye, but seldom in our island, it contains very deleterious qualities, and the "Festuca and Poa Fluitans" are often affected by it. It seems a monstrous production in place of the pickle and converted into another substance. J. D.

ON THE PROPER MANURE FOR TURNIPS.

(FROM A CORRESPONDENT.)

The very contradictory accounts continually given of the effects of different dressings for the turnip crop, call for a scientific inquiry into the various practices and the various soils on which the experiments are made, to show the necessity of carrying on the experimental trials in an inductive manner, that is on such principles as to carry conviction to the minds of those who hear the details. This method of proceeding it is feared is seldom pursued, hence the data are not sufficient to convince every one, for the results are so different by different experimentalists who do not take into account all the circumstances attendant on the trial, for the soil of the surface as well as the subsoil has to be considered; knowledge of minerals is necessary as well as the chemical compounds and affinities, the usual routine of cropping and dressing, the state of the weather when the seed is sown, and the abundance of insects in the ground are all subjects which affect the success of an inquiry into Nature's ways by an experiment on agricultural productions.

These remarks are called forth in consequence of seeing, in your excellent publication, some judicious remarks on the growth of Swedish turnips, and hearing some farmers say gypsum is good for turnips, and others say bone manure is of no service on their ground. These assertions were made by farmers on the opposite sides of the town of Alton in Hants. The same contradictory accounts may be collected on the opposite sides of the town of Guildford, where the marine alkali (soda) and the vegetable alkali (potash) are using as a dressing for land with various effects. Now the fact is that all these dressings yield a portion of vegetable food, but vegetables take up but very small quantities of either of these. Carbon and potash are the two principal foods, therefore if the soil is deficient in either of these a dressing of that particular one will be of service; if the soil is already overcharged with that particular food then no

effects will be discernible, for to whatever degree the land may be dressed with a particular manure the vegetable will take up no more than nature designed—man cannot make it take up more, as a horse may be taken to the pond to drink, but if he does not want cannot be made drink. Hence may be explained the remarks of the farmers in the neighbourhood of Guildford, who by experience say they have dressed their lands with gypsum until the soil is sick of the dressing and requires a change. Now all manures must be converted into a liquid state before they can become food for vegetables, and that dressing must be the best which contains the greatest variety of foods and is most readily converted into a liquid for absorption by the sponge-like mouths of the extremities of roots. Those animals which consume the greatest variety of aliments will cast off the greatest variety of vegetable food, hence the excrements of man now prepared and sold as humus is the most likely to yield the greatest abundance of food for a given weight of material. L.

IMPORTANT DISCOVERY.

Considerable sensation amongst the bakers in the City of Edinburgh has prevailed for some weeks past, in consequence of the discovery of an article possessing all the valuable qualities of the best wheat, and of a much cheaper cost.

The article in question has long been known to the faculty generally, as possessing the most nutritious qualities, and therefore much recommended in cases of indigestion, in assisting the constitution in regaining its energy, after fever, or severe illness have been subdued.

It is a Chinese vegetable production, collected by the natives, and by them taken in junks or boats, in its natural state, to Singapore, where it is manufactured into the state in which it arrives in this country, and known as an article of commerce, called *Sago*.

Within the last few months, in consequence of the dearth of corn, and sago being at an exceedingly low price, experiments were made, in trying it as an article of food for calves, pigs, horses, and dogs, all of which were found to thrive upon it to an astonishing degree. Whilst it had the effect of fattening calves and pigs, and producing most delicious meat, horses and dogs it put into the most beautiful condition; and it is well known in the sporting world that some dogs, fed upon sago alone, accomplished feats perfectly surprising.

Answering so well these purposes, a series of experiments were made as to its applicability of being made into bread; and these have become so successful, that the celebrated Dr. Andrew Combe, of Edinburgh, states "that it is light, digestible and palatable as any bread he ever tasted, and entirely free from the least tendency to sourness, even at the end of four days of mild weather, which would not have been the case with the ordinary bread at the end of forty-eight hours." He also observes, "it being easy of digestion in the stomach, affords a presumption that it will be well suited to the bowels also."

It appears the bread in question is composed of three-fourths of wheaten flour, and one-fourth of fine sago, and which enables the baker to make a much better loaf at a cheaper rate.

The baker who first introduced this bread, after its quality had borne the test of public opinion—had upwards of five thousand applicants in one day—and the Edinburgh papers are now teeming with advertisements from all the respectable bakers of "Sago Bread," "Sago Rolls," and "Sago Buns."

The present market price of sago is about 21s. per cwt. in bond—the duty is only 1s. per cwt.—and it is to be bought through any of the respectable colonial brokers in Mincing-lane.—*Commercial Gazette*.

A REVIEW OF THE PRICES OF CORN IN PRUSSIA

DURING THE 22 YEARS FROM 1816 TO 1837.

(Translated from the "*Allgemeine Preussische Staatszeitung*," Nos. 85 and 86, 1838.)

[We are indebted to the Journal of the Statistical Society for the subjoined article, which, although it may not be very interesting to the general reader, is, nevertheless, replete with valuable and important information in reference to the growth of corn in Prussia, and will be found exceedingly useful in considering the question of the Corn-laws.—Ed. F. M.]

A very large part of the corn which is produced in the Prussian States is immediately consumed by the cultivators of the soil. Those persons also, whose assistance the agriculturist requires for other purposes than the mere tillage of the land, are principally paid by allowances of corn, or portions of land; as, for instance, overseers, foresters, clergymen, schoolmasters, bailiffs, and other public officers, together with artisans whose services it is necessary to secure. Only the surplus of the produce is usually destined for the market; but there may be exceptions to this rule, arising from two causes. A necessity for procuring gold coin may become so imperious that more corn must be sold than can be spared after supplying the natural demand; in such unfortunate circumstances the agricultural population is insufficiently nourished, and if, through the progress of civilisation, it is no longer exposed to the danger of starvation, yet care and want enter in with their enfeebling effects, and leave behind but too sensible consequences. Diseases, which might once have been withstood, now end fatally; weaknesses, otherwise happily overcome, now leave a lurking evil behind; and mortality increases, while domestic anxiety lessen the number both of births and of marriages. It may be, however, that less corn is sold than what remains after the full supply of the natural wants of the population; as, for instance, if there be not a sufficient demand, or if the means are wanting of bringing the produce to a market where it is required; in such cases also there will be bitter complaint, and it will immediately be very sensibly felt, whenever there is a demand for gold. Since, however, a surplus in the stock of corn can in that case be employed in increasing the nourishment of the labouring class, and improving the stock of cattle, the ultimate consequences of such a stagnation may be very beneficial, if it produces a judicious increase of the consumption, and not a diminution of cultivation. It has often threatened to have the latter effect; but in a reasonable state of civilisation this is not to be feared, since active and prudent men never entirely relinquish the hope of finding a better sale in due time.

In the markets the proportion of the supply to the demand regulates the price of corn, as of any other merchandise. The most constant demand is always that which is created by the internal consumption. The more that men require food, which they cannot themselves raise, nor derive from fixed allowances, and the greater the enjoyments which these men allow themselves, the less reason is there to fear a stagnation in the sales through want of a demand. Where the great mass of the inhabitants not only raise their own food, or receive it in allowances, but also clothe themselves in the produce of their own frames and looms, and have but little occasion of

gold coin, even for the preparation of their dwelling and the furniture of their house and household, there the number of men cannot be considerable whom the profits of an employment, of which the productions are consumed in the country, place in a position to purchase food in the markets. If there be no other demand, the prices of corn can be very low only in years of moderately-good harvests, because little remains over to bring to market. It is true, that in such circumstances a high price of corn may be created by a foreign demand; but this is the more uncertain, exactly in proportion as it has corn for its object—corn takes up so much space in proportion to its value, and its weight is so great, that it can only be carried the distance of one or two days' journey by land, and even by sea cannot easily be transported with advantage to any distant place, the voyage to which lasts more than a month. If a pound of pure silver contains 28 dollars, and the average price of a bushel of wheat of 85lbs. amounts in Prussia, as will be presently shown, to 1 dollar 23 silver groschen and 10⁵/₈ pennies, 1,325lbs. of wheat may be bought for one pound of silver. There is therefore an important preparation required to remove the value of one pound of silver, if it is to be transported in the shape of wheat. The carriage of the less costly kinds of corn is still more difficult. If a country does not export its corn, but the produce of the labour of those who consume the surplus of its corn, the difficulties of exportation diminish in proportion as the value of a pound of this produce is more or less great. If, for instance, part of the population were engaged in mining and in the preparation of bar-iron, a pound of which is on an average worth about two silver groschen, then 420lbs. of iron must be exported for the value of one pound of silver; and yet that is not a third of the weight of the same sum laid out in wheat. If coarse cloth of native wool were exported, which is worth only 20 silver groschen the pound, then 42lbs. of cloth must be exported for the value of one pound of silver; that is, however, not a thirtieth part of the weight which is contained in the same money amount of wheat. A country which possesses the means of selling its corn of home-growth by the preparation of productions for exportation, facilitates the sale of the disposable corn, while it substitutes for it a lighter and more portable merchandise; and this, indeed, it does, exactly according to the proportion in which native labour enters into the merchandise. The foreign sale, however, whether it be of corn, or of manufactures, in the preparation of which the corn is consumed, always remains dependent upon the competition and commercial laws of foreign nations: it is therefore very uncertain, and may be very easily annihilated by circumstances which no human prudence may be able to foresee, and no power of any State be sufficient to avert. The interruption of prosperity is felt the more sensibly in proportion to the suddenness of such stoppages of trade, and the less prospect there appears of relief: this has been painfully experienced in the Prussian provinces, in which it had become a proverb, that they manufactured wheat for England, while that country manufactured for them sugar and coffee in her colonies, and within her own territory many productions of manufacturing industry. Much, however, as a trade with foreign countries may contribute to the speedy establishment of prosperity, yet that condition can only be secured to States by means of their internal consumption; the more fruitful the labours of a people are in the supply of their own wants, the higher will its prosperity rise, and the more firmly at the same time will it be rooted.

The prices of corn in the several provinces of

Prussia will afford a most instructive illustration of these general laws.* They are given monthly in the Prussian Official Gazette, according to the returns of the local authorities from a considerable number of those towns in which the trade in corn appears particularly remarkable. From these are framed monthly averages for the several provinces, with the exception of Brandenburg and Pomerania, which, from their close connexion in agricultural economy, are here united together. From these, yearly averages are calculated; and from these, again, other averages for 14 years; so that in each period of 14 years the two dearest and the two cheapest years are left out, and only the remaining 10 are taken into account in calculating the average. This process has now continued for 22 years, from 1816

to 1837, and the period contains nine averages of 14 years each, from which, lastly, an arithmetical mean price is further calculated. It cannot, however, be asserted that this mean is actually the average price of corn in each province of Prussia during these 22 years; it may, however, serve as an approximation to this average, since nothing more accurate is known. A true average can only be obtained when the quantity of corn sold, as well as the price, is known. To inquire into this with certainty and to a sufficient extent is, now at least, impossible. It may, however, be hoped that in a table thus arranged, most of the occasional errors balance one another; and, at all events, its uniformity admits of its being used with sufficient confidence, in comparing together the several provinces.

* The following are the average Annual Prices of the Prussian bushel, stated in silver groschen, for each province and each year, with averages for each period of 14 years, and for the whole period:—

WHEAT.							
Periods.	Prussia Proper. (a)	Posen.	Brandenburg & Pomerania.	Silesia.	Saxony.	Westphalia.	Rhenish Provinces.
	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.
1816	70 1	78 10	84 9	94 11	96 10	110 7	112 2
1817	100 5	96 10	115 11	106 0	122 6	152 0	165 0
1818	94 3	78 4	101 8	80 7	92 4	103 1	105 9
1819	65 5	60 5	72 11	61 10	61 5	77 10	72 1
1820	51 10	52 1	56 9	55 1	52 3	59 7	65 1
1821	48 8	54 7	54 7	67 5	48 8	62 1	56 10
1822	49 5	54 2	50 9	62 8	50 7	60 4	55 8
1823	46 0	52 2	50 10	57 0	51 10	54 2	58 4
1824	34 9	35 11	38 1	39 10	39 9	36 4	39 9
1825	32 5	32 2	33 10	35 2	33 10	35 0	40 11
1826	35 5	36 0	40 0	39 5	33 5	38 3	44 2
1827	42 4	44 1	49 1	47 10	41 11	55 1	56 7
1828	51 8	51 0	54 6	56 9	56 8	62 7	72 6
1829	61 5	60 1	66 8	58 11	65 8	75 3	78 7
1830	56 3	55 9	64 8	53 9	60 8	77 7	75 11
1831	75 5	78 2	74 9	71 9	67 0	92 11	91 2
1832	64 9	59 8	63 7	51 4	56 10	71 11	83 8
1833	47 6	44 3	41 9	41 2	41 11	50 7	57 2
1834	45 1	43 10	43 9	43 2	39 1	43 8	49 1
1835	43 7	46 9	45 4	49 9	42 1	44 7	49 4
1836	39 8	39 10	43 6	39 9	44 2	46 7	52 0
1837	42 8	44 7	49 3	41 1	47 0	50 11	58 0
Average of							
1816—29	52 3	54 3	58 1	58 9	56 1	64 10	66 7
1817—30	50 10	52 0	56 1	56 1	52 11	62 3	63 7
1818—31	50 10	52 0	56 1	56 1	52 11	62 3	63 7
1819—32	50 9	51 11	55 2	54 6	52 1	61 8	63 7
1820—33	49 1	50 4	52 11	52 5	50 1	59 0	62 1
1821—34	48 4	49 7	51 8	51 3	48 9	57 5	60 6
1822—35	47 10	48 9	50 9	49 11	48 2	55 8	59 9
1823—36	46 11	47 4	50 0	48 0	47 6	54 3	59 4
1824—37	46 7	46 7	49 10	46 5	47 0	53 11	59 4
Average of the whole Period }	49 3	50 4	53 5	52 7	50 7	59 0	62 0

(a) Prussia Proper, comprising the districts (Regierungs-bezirken) of Königsberg, Gumbinnen, Dantzic, and Marienwerder; Posen, comprising those of Posen and Bromberg; Brandenburg and Pomerania, comprising those of Potsdam, Frankfurt, Stettin, Köslin, and Stralsund; Silesia, comprising those of Breslau, Oppeln, and Leignitz; Saxony, comprising those of Magdeburg, Merseburg, and Erfurt; Westphalia, comprising Münster, Minden, and Arnsberg; and the Rhenish provinces, comprising Cologne, Düsseldorf, Coblenz, Trier, and Aix-la-Chapelle.

The average of all the nine periods of 14 years, from 1816-29 to 1824-37, were as follows, in each province:—

Provinces.	Wheat.	Rye.	Barley.	Oats.
	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.
Prussia Proper	49 3	30 2	21 10	16 3
Posen	50 4	33 1	25 4	19 5
Brandenburg & Pomerania	53 5	36 2	26 10	21 3
Silesia	52 7	38 0	29 2	21 7
Saxony	50 7	38 3	28 11	21 7
Westphalia ...	59 0	44 9	33 4	23 9
Rhenish Pro- vinces.....	62 0	46 6	35 5	23 3
Average ...	53·11	38· 1	28· 8	21· 0

The following are the average prices during each of the nine periods of 14 years for the whole State :—

Periods.	Wheat.	Rye.	Barley.	Oats.
	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.
1816—29	58 5	41 3	31 1	22 8
1817—30	56 3	39 3	29 7	21 9
1818—31	56 3	39 3	29 4	21 5
1819—32	55 9	38 11	29 2	21 3
1820—33	53 9	37 8	28 2	20 8
1821—34	52 6	37 2	27 8	20 4
1822—35	51 7	37 4	28 1	20 8
1823—36	50 6	36 7	27 8	20 6
1824—37	49 11	35 9	27 4	20 0
Average..	53·11	38· 1	28· 8	21· 0

RYE.							
Periods.	Prussia Proper.	Posen.	Brandenburg & Pomerania.	Silesia.	Saxony.	Westphalia.	Rhenish Pro- vinces.
	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil gr. pf.
1816	42 7	47 1	54 6	68 1	76 10	89 6	91 10
1817	56 10	59 4	73 5	75 11	97 5	118 9	131 8
1818	52 10	49 7	67 6	52 1	69 9	82 6	79 6
1819	42 10	40 6	54 2	41 0	47 7	63 6	57 2
1820	30 10	30 11	37 7	35 4	38 6	42 10	46 3
1821	25 11	27 10	29 2	37 3	32 5	41 10	36 9
1822	30 4	34 10	30 11	44 5	35 1	40 11	40 5
1823	32 7	38 5	36 11	47 6	41 10	41 9	49 4
1824	16 2	17 10	21 1	24 3	24 0	22 3	25 9
1825	17 6	16 5	20 10	18 6	20 5	21 11	28 10
1826	26 4	25 5	30 9	27 0	27 3	30 10	36 3
1827	32 11	37 4	42 2	43 0	40 1	50 4	48 2
1828	28 0	37 5	38 5	46 3	47 5	50 2	54 2
1829	26 11	31 7	36 4	37 9	41 5	46 2	51 9
1830	28 0	35 0	37 0	40 8	38 10	59 0	54 4
1831	42 8	53 3	51 8	49 0	50 1	72 2	68 7
1832	39 9	42 2	47 7	40 7	48 1	57 10	65 7
1833	33 7	28 6	32 8	28 8	34 9	39 8	43 3
1834	32 4	29 3	32 10	31 5	30 11	33 3	36 5
1835	33 6	32 6	36 7	32 9	33 2	36 5	37 9
1836	23 8	23 2	30 6	22 8	32 10	34 5	38 10
1837	26 9	27 3	31 9	26 9	36 4	36 0	45 9
Average of							
1816—29	31 11	35 2	39 1	41 2	42 2	49 1	50 0
1817—30	30 6	33 11	37 4	40 0	39 0	46 9	47 5
1818—31	30 5	33 11	37 1	40 0	39 0	46 9	47 5
1819—32	30 2	35 11	36 8	39 4	39 0	46 2	47 5
1820—33	29 6	32 9	35 2	38 1	37 9	44 3	46 1
1821—34	29 8	32 7	34 9	37 8	37 0	43 3	45 1
1822—35	30 5	33 0	35 5	37 3	37 1	42 9	45 2
1823—36	29 9	31 10	35 5	35 1	36 10	42 1	45 0
1824—37	29 2	30 9	34 11	33 1	36 4	41 6	44 8
Average of the whole Period }	30· 2	33· 1	36· 2	38· 0	38· 3	44· 9	46· 6

The average price of Wheat was considerably higher during 1837, in all the provinces of Prussia, than during the preceding year. The price per bushel, in silver groschen, was as follows:—

	1836		1837	
Provinces.	Sil.gr.pf.	Sil.gr.pf.	Sil.gr.pf.	Sil.gr.pf.
Prussia Proper	39	8	42	8
Posen	39	10	44	7
Brandenburg & Pomerania..	43	6	49	3
Silesia	39	9	41	1
Saxony.....	44	2	47	0
Westphalia ...	46	7	50	11
Rhenish Provinces	52	0	58	0

The average, however, of the 14 years from 1824 to 1837 was rather lower than the average from 1823 to 1836, and was the lowest among the nine general averages of the same number of years since 1816-29, for which data upon similar grounds are furnished

in the statistical department. These general averages are as follows:—

	1816-29		1824-37	
Provinces.	Sil.gr.pf.	Sil.gr.pf.	Sil.gr.pf.	Sil.gr.pf.
Prussia Proper	52	3	46	7
Posen	54	3	46	7
Brandenburg & Pomerania..	58	1	49	10
Silesia	58	9	46	5
Saxony.....	56	1	47	0
Westphalia ...	64	10	53	11
Rhenish Provinces	66	7	59	4

These two averages for the whole State are in the proportion of 701 to 599, or nearly 7 to 6. In the last nine years, therefore, the yearly price of wheat, calculated on the average of 14 years, has fallen in the Prussian states about one-seventh, or 14 $\frac{2}{7}$ per cent. An explanation of this remarkable fact cannot be found in the accidental circumstances of the wea-

BARLEY.

Periods.	Prussia Proper.	Posen.	Brandenburg & Pomerania.	Silesia.	Saxony.	Westphalia.	Rhenish Provinces.
	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.
1816	26 9	31 8	39 9	49 6	50 10	62 7	60 7
1817	35 2	37 8	50 10	56 7	72 2	80 5	94 1
1818	38 10	37 6	50 4	59 11	55 11	59 8	58 11
1819	33 3	31 10	42 5	31 10	38 9	53 6	48 6
1820	21 5	25 2	30 5	26 8	29 9	35 5	37 3
1821	16 7	20 7	22 5	28 6	25 5	30 11	27 6
1822	21 2	24 5	22 3	32 11	29 1	28 1	32 0
1823	25 6	29 9	26 9	35 0	31 3	31 11	39 0
1824	12 6	14 7	16 9	17 10	17 1	19 7	20 8
1825	13 6	14 1	16 7	14 8	17 2	19 8	24 5
1826	20 1	20 7	23 3	20 3	21 5	25 11	28 3
1827	26 4	28 11	31 9	31 8	29 3	38 8	36 4
1828	19 11	28 9	27 1	36 8	32 2	33 11	40 5
1829	18 8	23 10	27 2	31 2	30 10	32 5	36 7
1830	18 5	25 8	26 7	30 4	28 2	38 8	36 9
1831	30 4	38 0	33 2	35 0	34 6	51 0	47 6
1832	30 3	33 11	34 7	31 8	36 1	42 3	52 0
1833	22 1	20 10	23 3	21 7	27 8	31 2	35 9
1834	22 3	22 4	23 9	23 4	23 9	25 5	23 4
1835	26 0	27 7	29 1	29 3	28 4	31 7	30 4
1836	19 5	21 2	24 9	19 8	27 9	29 7	31 5
1837	20 11	21 4	24 9	21 1	28 0	28 4	35 5
Average of 1816—29	23 0	26 7	29 4	31 5	31 10	37 0	38 6
1817—30	22 2	25 11	28 0	30 6	29 7	34 11	36 3
1818—31	21 10	25 11	27 1	30 4	29 2	34 8	36 2
1819—32	21 10	25 11	27 1	30 0	29 2	33 10	36 2
1820—33	21 0	24 10	26 1	29 0	28 6	32 8	35 0
1821—34	21 1	24 7	25 5	28 8	27 11	31 9	34 1
1822—35	22 0	25 3	26 1	28 10	28 2	31 11	34 4
1823—36	21 10	24 11	26 4	27 6	28 1	31 7	34 4
1824—37	21 5	24 2	26 2	26 1	27 9	31 0	33 11
Average of the whole Period }	21·10	25·4	26·10	29·2	28·11	33·4	35·5

ther or of the state of trade during any particular years ; for, as has been already mentioned, according to the prescribed method of taking the averages of 14 years, by which the two highest and two lowest years are always left out, unusually good or bad harvests, and sudden and temporary commercial speculations or stagnations in trade, are not taken into account. Still less can a progressive division of the soil be, with any probability, assigned as a cause of this fall in price, since in the province in which the land is by far the most divided, the prices continue, nevertheless, considerably higher than in any of the other provinces. The consumption of wheat in the country must in all probability have increased, since the population during the last 9 years has increased from not quite 12 $\frac{3}{4}$ to probably 14 millions, or about 10 per cent. The census, at the end of the year 1828, gave a population of 12,726,110 ; the result of the enumeration at the end of the year 1837 cannot at present be stated ; but there is every probability that it will amount to about 14,000,000. In the laws of foreign nations, which limit the importation of corn from Prussia into their ports, there has been, during the last 9 years, no material change which might account for a progressive decrease in the price of wheat. It can therefore only be by the

progress made in the better cultivation of the land, which has caused an increase in the production of wheat, that this fall in the average price of this kind of grain, during the periods in question, can apparently be explained.

The average price of Rye was also higher in each of the provinces of the State, during the year 1837, than during the year immediately preceding. It was as follows :—

	1836		1837		
Provinces.	Sil.gr.	pf.	Sil.gr.	pf.	
Prussia Proper	23	8	26	9	Average of the whole State. Sil. gr. pf. 1836 29 5 1837 32 11
Posen	23	2	27	3	
Brandenburg & Pomerania..	30	6	31	9	
Silesia	22	8	26	9	
Saxony	32	10	36	4	
Westphalia ...	34	5	36	0	
Rhenish Provinces	38	10	45	9	

Nevertheless, the average price of this grain also was lower, during the 14 years from 1824 to 1837 in all the provinces, than during the 14 years from 1823 to 1836; and it is also, with one immaterial

OATS.							
Periods.	Prussia Proper.	Posen.	Brandenburg & Pomerania.	Silesia.	Saxony.	Westphalia.	Rhenish Provinces.
	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.
1816	21 0	26 0	29 2	35 6	33 8	37 10	34 1
1817	27 7	28 3	37 8	38 9	40 5	47 11	50 0
1818	29 2	27 10	37 3	31 7	42 5	38 11	32 8
1819	23 11	23 4	32 0	24 4	30 6	38 6	33 8
1820	17 3	20 0	24 4	21 4	23 5	25 4	27 1
1821	13 4	14 11	18 0	20 1	20 5	20 11	16 5
1822	14 7	19 0	18 8	24 3	22 1	19 8	20 6
1823	18 8	22 4	21 6	26 4	25 0	24 10	24 9
1824	10 2	11 6	13 8	15 7	13 0	13 11	13 9
1825	10 4	11 0	12 7	11 11	12 9	14 6	17 4
1826	16 1	15 8	13 5	16 8	16 11	20 3	20 11
1827	20 7	21 0	23 10	23 7	21 9	25 10	23 3
1828	14 8	20 11	21 8	26 1	21 11	23 7	25 3
1829	13 8	18 4	21 3	22 0	21 10	22 3	23 3
1830	13 8	20 4	21 3	23 4	20 9	26 7	22 6
1831	23 0	29 4	25 11	25 1	23 8	34 7	28 9
1832	21 9	24 11	25 7	20 4	25 8	30 5	32 5
1833	15 10	17 7	19 11	15 8	22 1	24 10	25 5
1834	16 0	19 4	19 1	20 3	17 11	20 5	21 4
1835	17 7	21 3	22 6	21 5	21 0	22 1	22 0
1836	13 6	16 0	19 4	14 1	21 0	20 7	22 0
1837	14 4	16 10	19 3	16 0	19 11	18 1	22 4
Average of							
1816—29	17 4	20 2	22 11	23 7	23 9	25 11	24 10
1817—30	16 8	19 7	22 1	22 10	22 5	24 9	23 9
1818—31	16 7	19 7	21 6	22 8	21 9	24 5	23 4
1819—32	16 5	19 7	21 5	22 1	21 9	24 0	23 4
1820—33	15 10	19 0	20 11	21 3	21 6	23 5	23 0
1821—34	15 8	18 11	20 4	21 1	20 11	22 11	22 5
1822—35	16 2	19 7	20 10	21 3	21 0	23 0	22 11
1823—36	16 0	19 3	20 10	20 3	20 11	23 1	23 1
1824—37	15 7	18 9	20 8	19 4	20 6	22 5	22 10
Average of the whole Period }	16. 3	19. 5	21. 3	21. 7	21. 7	23. 9	23. 3

exception, of the provinces of Brandenburg and Pomerania, generally the lowest of the nine periods of 14 years quoted. Here also the average for the 14 years from 1816 to 1829 was the highest of the nine similar periods under consideration, and the fall in the interval was as follows:—

	1816-29		1824-37		
Provinces.	Sil.gr.pf.	Sil.gr.pf.	Sil.gr.pf.	Sil.gr.pf.	
Prussia Proper	31	11	29	2	Average of the whole State. Sil. gr. pf. 1816-29 41 3 1824-37 35 9
Posen	35	2	30	9	
Brandenburg & Pomerania..	39	1	34	11	
Silesia	41	2	33	1	
Saxony	42	2	36	4	
Westphalia	49	1	41	6	
Rhenish Provinces	50	0	44	8	

The average price had therefore fallen from 495 to 429 pennies the bushel. These figures are nearly in the proportion of 15 to 13; and therefore the price of rye fell, according to the averages of the 14 years, less than the price of wheat—namely, about two-fifteenths, or $13\frac{1}{3}$ per cent.

The comparative prices of summer corn were by no means so regular in their course as those of winter corn. The average price of Barley, especially, was higher in some provinces, and lower in others, in the year 1837, than during the preceding year.

	1836		1837	
Provinces.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.
Prussia Proper	19	5	20	11
Posen	21	2	21	4
Brandenburg and Pomerania..	24	9	24	9
Silesia	19	8	21	1
Saxony	27	9	28	0
Westphalia	29	7	28	4
Rhenish Provinces	31	5	35	5

The crops of barley in the different parts of the country were notoriously so different, that an average of these single years for the whole State will not afford any useful result. It is true, that among the several periods of 14 years the average price of barley, as of wheat and rye, was greater in all the provinces during the years 1816-29; but the average price from 1824 to 1837 was lowest only in the provinces of Posen, Silesia, Saxony, Westphalia, and in those on the Rhine, whilst in those parts of the country adjoining the East Sea, it was somewhat lower in other years: in Prussia Proper, for instance, it was 21 S. gr. 5 pf. in 1824-37, and 21 S. gr. in 1820-33; and in Brandenburg and Pomerania it was 26 S. gr. 2 pf. in 1824-37, and 25 S. gr. 5 pf. in 1821-34.

If, however, without referring to these years, only the first and last of these nine averages of 14 years be compared, the fall in the price will be as follows:

	1816-29		1824-37		
Provinces.	Sil.gr.pf.	Sil.gr.pf.	Sil.gr.pf.	Sil.gr.pf.	
Prussia Proper	23	0	21	5	Average of the whole State. Sil. gr. pf. 1816-29 31 1 1824-37 27 4
Posen	26	7	24	2	
Brandenburg & Pomerania..	29	4	26	2	
Silesia	31	5	26	1	
Saxony	31	10	27	9	
Westphalia	37	0	31	7	
Rhenish Provinces	38	6	33	11	

From the beginning, therefore, to the end of this period, the price of a bushel of barley, upon averages

of 14 years each, had fallen from 373 to 328 pennies, or somewhat more than 12 per cent.

In the same manner the average price of Oats has varied unequally in the several provinces during the last two years.

	1836		1837	
Provinces.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.
Prussia Proper	15	6	14	4
Posen	16	0	16	10
Brandenburg and Pomerania..	19	4	19	3
Silesia	14	1	16	0
Saxony	21	0	19	11
Westphalia	20	7	18	1
Rhenish Provinces	22	0	22	4

Here, also, among the nine periods under consideration, the average price from 1816 to 1829 was the highest in all the provinces: but, on the other hand, the average from 1824 to 1837, like that of barley, was the lowest in most, but not in all the provinces: for instance, the average price in Brandenburg and Pomerania during 1824-37 was 20 S. gr. 8 pf.; in 1821-34 it was 20 S. gr. 4 pf.; and in the Rhenish provinces it was 22 S. gr. 10 pf. in 1824-37, and 22 S. gr. 5 pf. in 1821-34. Here the exception occurs at the same period, but in two provinces very different in position, population, and trade.

If the average prices of only the first and last of the periods under review be compared, the following will shew the extent of the fall:—

	1816-29		1824-37		
Provinces.	Sil.gr.pf.	Sil.gr.pf.	Sil.gr.pf.	Sil.gr.pf.	
Prussia Proper	17	4	15	7	Average of the whole State. Sil. gr. pf. 1816-29 22 8 1824-37 20 0
Posen	20	2	18	9	
Brandenburg & Pomerania..	22	11	20	8	
Silesia	23	7	19	4	
Saxony	23	9	20	6	
Westphalia	25	11	22	5	
Rhenish Provinces	24	10	22	10	

The price, therefore, on an average of 14 years, fell during this period from 272 to 240 pennies. These figures are nearly in the proportion of 17 to 15; the fall, therefore, was two-seventenths, or $11\frac{1}{7}$ per cent.

If the several kinds of grain be brought together, the fall in the price of each, according to the averages of 14 years, will be as follows:—

Wheat	14 $\frac{2}{3}$ per cent.
Rye	13 $\frac{1}{3}$
Barley, rather above	12
Oats	11 $\frac{1}{2}$

decreasing, therefore, in a smaller proportion with the less valuable kinds of grain.

This agrees well with the view already pointed out, that an increased production of corn, arising from a better cultivation of the land, is the probable cause of this fall in price, for in an increase of cultivation, attention is mostly turned to the production of those crops which possess the highest value; that is, the cultivation of barley increases more than that of oats,—the cultivation of rye more than that of barley,—and the cultivation of wheat more than that of rye.

The density of the population in the several provinces exercises an undoubted influence on the average prices of corn; but this alone does not determine them, for the different degrees of prosperity, and the proportion of the town population to the

total number of inhabitants, influence them materially. The accounts of the density of the population at the beginning of the year 1816 are so little to be depended upon, by reason of the uncertainty attending the population returns then made, that they do not afford grounds for any important deductions. In the year 1820, for the first time, the enumeration was more correct, and therefore the density of the population at the end of that year has been chosen to compare with the last census at present made public, which was taken at the end of the year 1834. According to these accounts, the number of inhabitants to a geographical square mile in the several provinces at the two periods, and the increase during the 15 years, were as follows:—

Provinces.	No. to a Square Mile. 1820	1834	Increase.
Prussia Proper .	1,461	1,760	299
Posen.....	1,705	2,089	384
Brandenburg and Pomerania...	1,626	1,997	371
Silesia.....	2,940	3,435	495
Saxony.....	2,767	3,236	469
Westphalia	3,023	3,514	491
Rhenish Pro- vinces.....	4,146	4,887	741

According to the census at the end of the year 1834, the following number of persons, out of 100,000 of the total population, were living in cities, amongst which are included all places in the situation of cities, represented as such:—

	Inhabitants.
In Prussia Proper	21,881
Posen	27,079
Brandenburg and Pomerania..	37,727
Silesia.....	20,002
Saxony	35,428
Westphalia	21,436
Rhenish Provinces	26,820

The density, therefore, of the population, was nearly three times as great in the Rhenish provinces in 1820 as it was in Prussia Proper; nevertheless, in the 15 years to 1834 it has increased on an average 741 inhabitants to each square mile, whilst the increase in Prussia Proper during the same period has only been 299, which is at the rate of about two-fifths of the former province.

The density of population, instead of lessening the share of each individual in the produce of the soil, has even increased it here to such an extent, that an influx of new inhabitants could be more easily borne in this province than in the district so much more thinly populated. A greater importance attaches to this fact, because the inhabitants of towns in the Rhenish provinces amount to about one-fourth, and in Prussia Proper to about one-fifth, of the total population; whilst a much larger proportion of the rural population of the Rhenish provinces live in the prosecution of employments, and in the possession of enjoyments, much more resembling those of residents in a town than many inhabitants of the smaller cities in Prussia Proper. The villages of the Rhenish provinces are full of inhabitants who receive the returns for their labour, not in natural produce, but in gold coin; and that part of the population which does not itself raise and prepare a supply for their own wants, but have recourse to the markets for it, is much larger here than in Prussia Proper. In consequence, therefore, of all these circumstances, the general average prices of all kinds of grain during the 22 years under review are much higher in

the Rhenish provinces than in Prussia Proper, as will be seen in the following table:—

	Rhenish Provinces.	Prussia Proper.
	Per bushel. Sil. gr. pf.	Per bushel. Sil. gr. pf.
Wheat	62 0	49 3
Rye	46 6	30 2
Barley	35 5	21 10
Oats	23 3	16 3

Hence, in Prussia Proper, the average price of rye, which is the food most commonly used, was not quite two-thirds of what it was in the Rhenish provinces. A still greater difference existed in the relative prices of barley, which were in the proportion of five to three. The price of oats in Prussia Proper was only about two-thirds of the average in the Rhenish provinces. Of wheat alone has the price in the former province risen to about four-fifths of the average price in the Rhenish provinces; but this was the consequence, at least in some years, of a foreign demand. Generally, however, the average prices of all the four kinds of grain are lower in Prussia Proper than in any other province of the State; in the Rhenish provinces, on the contrary, the prices of wheat, rye, and barley, are the highest; with respect to oats alone, the average price is about half a silver groschen higher in Westphalia than in the Rhenish provinces, which arises from the latter district containing on an average only two-thirds of the number of horses in a square mile which are to be found in Westphalia.

Among the provinces of the vast eastern portion of the Prussian states, Silesia is the most thickly peopled: still even here the population has increased during the 15 years from 1820 to 1834, on an average, about 495 inhabitants to the square mile. The more thinly-peopled provinces of Prussia Proper, Posen, Brandenburg, and Pomerania, have fallen far short of this increase, and even the manufacturing and prosperous province of Saxony has not quite equalled it. But the average prices of corn in Silesia, during the whole period, were not in proportion higher than might have been expected from these circumstances. They amounted, as has been before shewn, to the following sums in each province:—

	Saxony.	Silesia:	Brandenburg and Pomerania.
	Sil. gr. pf.	Sil. gr. pf.	Sil. gr. pf.
Wheat ...	50 7	52 7	53 5
Rye ...	38 3	38 0	36 2
Barley ..	28 11	29 2	26 10
Oats	21 7	21 7	21 3

The greatest differences between these prices are so small that they can only be considered accidental: there must therefore be circumstances which counteract the influence of the denser population of Silesia, and partly also of Saxony. These may most probably be found in the very different proportion which the town population bears to the total number of inhabitants. According to the foregoing calculation, the number of the town population, out of 100,000 inhabitants, was in the several provinces as follows: Saxony, 35,428; Silesia, 20,002; Brandenburg and Pomerania, 37,727. In Silesia, therefore, only a fifth, while in Saxony considerably above a third, of the total population dwell in towns. It is true, that the province of Saxony contains no city of the size of Breslau, but, on the other hand, it contains, besides Magdeburg, (which in respect of population,

even without taking its suburbs into account, contains more than the half of Breslau) Erfurt, and Halle, the population of which exceeds double that of any other city in Silesia, and it has besides many more considerable towns of a middling size than Silesia. In the small towns the condition of the two provinces is not so different. This preponderance of the middling towns undoubtedly counteracts the influence of the denser population in Silesia.

In the provinces of Brandenburg and Pomerania above three-eighths of the total population dwell in towns. The cities of Stettin, Frankfurt, and Potsdam, together contain about as many inhabitants as Breslau, and on account of their manufacturing and commercial relation may together consume about the same proportion of food. On the other hand, Berlin alone contains nearly three times as many inhabitants as Breslau, and probably the consumption is also in the same proportion. The middling towns of both provinces may be tolerably alike, both in population and consumption. Stralsund and Brandenburg, perhaps exceed Gölitz and Glogau; but on the other hand, Stargard, in Pomerania, Landsberg on the Weser, and Guben scarcely balance Brieg, Liegnitz, and Grüneberg. In general, however, it can only be the great preponderance of Berlin that can explain how the prices of corn in such thinly-peopled districts as the provinces of Brandenburg and Pomerania, including even their large cities, can very nearly equal the prices in Silesia and Saxony. The influence of great capitals, and particularly of Berlin, upon industry and prosperity, not only in the immediate neighbourhood, but even in districts at a considerable distance, is indeed fully acknowledged by agriculturists, and manufacturers, and perhaps even, notwithstanding its great extent, it is overestimated; but it is still very requisite that, for the administration of the State, and for general knowledge, it should be stated as clearly and distinctly as the wants of both require. An attempt however, to solve this question, would carry the essay beyond its proper limits.*

R.

CAOUTCHOUC HORSE SHOES.—The *Veterinarian* says:—"The well-known elasticity of this substance, together with the analogy of its nature and consistence with the natural state of some parts of the foot, seem to point out not only as a remedy in abnormal states of this organ, but as a conservative application in its more healthy condition. To the physical property of

elasticity, although only partially possessed by leather, may be attributed the chief benefit, if not all the advantages, derived from the use of it: it is a spring interposed between the shoe and the foot, which, diminishing the force of the concussion, obviates a portion of its evil effects. Caoutchouc is a non-conductor of electricity, and probably may possess some protective influence over the various delicate tissues and beautiful organisation of the foot. The debilitating effect of metallic contact is known and well appreciated by the humane physician.

AN ACCOUNT OF A COMPARATIVE TRIAL OF STABLE-MANURE AND BONE-DUST FOR RAISING TURNIPS ON A CLAY SOIL.

BY MR. HENRY MAXWELL, OF CALDERWOOD.

The following are the particulars of the turnip crop which was raised by stable-manure and bone-dust on Sir William Maxwell's property of Calderwood, this season.

The nature of the soil where the turnips grow may be described as a strong loam on a retentive clay bottom. Before draining, the field generally was very wet and sour, but a thorough application of the cross or branch drain system completely divested it of all moisture; and as the ground was ploughed and cleared under favourable auspices, the condition of the land at the time of receiving the seed was very satisfactory. It may be proper to remark, that the field, which was old lea, was drained in the beginning of 1832, a crop of oats taken off it during that season, and prepared for turnips during last spring. In addition to the quantities of manure laid on the land, as will be found in the statement below, seven and a half chaldrons of lime, of excellent quality, were applied to each acre (the Scotch). The seed, which was of the finest quality (procured from Mr. Lawson), was all deposited at rather an early period. Where stable-manure was applied, the braird came away at first more rapidly and vigorously than was the case with the bones; but, ultimately, the bones gained ground, and, if any thing, got rather the start of the stable manure in point of *shaw* or leaves. The whole field brairded beautifully, with scarce an exception, and the crop did not suffer in any degree from the ravages of the fly. In order to ascertain the results of bone and stable manure in regard to the produce of turnip per acre, the most accurate calculations and trials were made;

* The following information will be useful to those who wish to compare the prices in the above article with those in this country. A Prussian bushel (*scheffel*)=1.504, or just $1\frac{1}{2}$, of an Imperial bushel, and therefore $5\frac{1}{3}$ Prussian bushels = 1 Imperial quarter. The average rate of exchange at Dantzic upon London from 1816 to 1837 was sgr. 203 $\frac{1}{8}$ per pound sterling. Upon these data, wheat at 50 sgr. per Prussian bushel = 1*l.* 6*s.* 3 $\frac{1}{4}$ *d.* per imperial quarter, every addition 5 sgr. per Prussian bushel = 2*s.* 7 $\frac{1}{2}$ *d.* per imperial quarter, and each additional sgr. = 6 $\frac{1}{4}$ *d.*; so that the average of wheat during the whole period, as shewn in the first table at p. 419 will equal 1*l.* 8*s.* 3 $\frac{3}{4}$ *d.* per imperial quarter. For the use of those who desire to be more exact in the comparison of the several years, the average annual rates of exchange are added. Those from 1816 to 1825 are calculated from returns made by His Majesty's Consul at Dantzic, and the latter have been obtained

through the kindness of the Prussian Consul General in London.

Years.	f.	gr.	sgr.	Years.	sgr.
1816	19	21	=197	1826	207 $\frac{3}{4}$
1817	18	29	189 $\frac{2}{3}$	1827	205 $\frac{1}{6}$
1818	18	13	184 $\frac{1}{3}$	1828	202 $\frac{2}{3}$
1819	19	14	194 $\frac{2}{3}$	1829	203 $\frac{2}{3}$
1820	20	20	206 $\frac{2}{3}$	1830	203 $\frac{1}{2}$
1821	21	9	213	1831	202
1822	21	0	210	1832	208 $\frac{6}{7}$
1823	21	8	212 $\frac{2}{3}$	1833	207 $\frac{1}{7}$
1824	20	15	205	1834	205 $\frac{3}{7}$
1825	20	2	200 $\frac{2}{3}$	1835	206 $\frac{2}{3}$
Average..201 $\frac{1}{8}$				1836	203 $\frac{7}{8}$
				1837	203 $\frac{1}{2}$
				1838	203 $\frac{7}{8}$
				Average 204 $\frac{9}{10}$	

and I have no hesitation in affirming the correctness of the statement in all particulars. In conclusion, I have merely to remark, that the quality of the soil is by no means particularly well adapted for turnip culture, partaking, as it does, rather too much of the clayey character, for which reason also, there is little doubt that the comparatively unfavourable development of the effects of bones as a manure is chiefly to be ascribed. As to the quality of the turnips produced, the specimens which I have sent to Mr. Lawson's very interesting agricultural museum will best testify. They were carefully selected, with a view of furnishing a fair average of each description. This is the statement referred to.

Swedish—30 cart-loads stable manure, per Scotch acre, produced	29 tons.
60 bushels crushed bones, per ditto, ...	24
Dale's Hybrid—30 cart-loads stable manure, per ditto	33
60 bushels crushed bones, per ditto..	31
45 ditto ditto, per ditto	29
Yellow Bullock—30 cart-loads stable manure, per ditto	29
60 bushels crushed bones, per ditto..	28
Globe—30 bushels crushed bones, per ditto	25
25 ditto ditto, per ditto ditto	23 ton 18 cwt.
No stable manure.	

Quarterly Journal of Agriculture.

ON THE CROSS BREED OF SHEEP BETWEEN THE COTSWOLD AND THE SOUTHDOWN.

SIR,—Having seen in your paper at different times various communications from your correspondent, Mr. Twynam, on the above subject, as also an address in your paper of the 6th inst. from Mr. Fielder, President of the last Stockbridge Cattle Show, I am induced to offer a few remarks as the result of some considerable experience; and in doing so, Sir, I would most distinctly deprecate the idea of entering on any newspaper controversy with Mr. Twynam, for which I have neither time, inclination, or ability. I have always read his communications with great interest, more particularly one at the commencement of the last harvest on "the yellow maggot in the wheat," an article which reflected on him the highest credit for accuracy of observation, and diligence of research. I know but of one drawback from his letters; it would be well if he threw into them less of personal feeling, and dealt less in invective and sarcasm on his brother farmers; these are poor weapons at the best, and truth needs not their aid.

Having been in the occupation of an extensive sheep farm for several years, and in the habit of shearing about twelve hundred Southdown sheep annually, when the value of wool increased so materially as it did about six years since, it became with me a matter of considerable moment to pay particular attention to the weight and value of the fleece. Not feeling satisfied with the weight of the Southdown fleece, and with a view to its increase, I was induced, in the year 1833, to cross the whole of my ewes with the Cotswold ram; I have continued the cross ever

since, using the Cotswold ram with the Down ewes, and putting half-bred rams to their half-bred progeny, so that at the present time my whole stock (excepting lambs of the present year) consists of the genuine half breed.

I perfectly agree with Mr. Twynam that there is no difficulty in perpetuating them as a distinct breed possessing a considerable degree of uniformity, that there is no great objection on the score of hardness, and that they yield an increased individual weight both of fleece and carcass. Yet having made these admissions I am compelled to state, as the result of my own experience, that it is *not* the most profitable breed to the farmer, and have followed up my conviction by adding myself last year to the list of those who are crossing back again to the Southdowns.

There are two or three serious objections to the breed which appear to have been lost sight of; they require more food per head, the same number cannot be kept on a farm as of the Southdowns. I take upon myself to state this, not as a mere matter of opinion, but as a decided fact, I have been obliged to lessen the number of my flock annually, as my half-breds have increased. I have now only 1,000 on the same extent of land where six years since I kept 1,200 Southdowns, and to enable me to keep that number I am obliged to resort to a greater extent of artificial food. These numbers apply to ewes and dry sheep, and do not include the lambs. They are not so prolific as the Southdowns, so many lambs cannot be reared, the ewes are continually turning, and eventually a considerable number prove entirely barren. I know this to have been the experience of some others as well as myself. From a breeding flock of 600 ewes I cannot raise so many lambs by nearly 100 as I formerly did from the same number of Downs, and as my immediate neighbours are in the habit of doing. When they come to be disposed of at the fair, their relative value cannot be obtained, that is a larger framed cross bred sheep will realize but little if any more than a smaller framed Down. Mr. Twynam and some few other crack keepers have obtained considerably higher prices, but those have been frequently fancy prices, and would not apply to the regular sale sheep of farmers in general.

I cannot but think Mr. Twynam's challenges amount to very little indeed if intended to decide which is the most profitable breed. He may very probably produce ten, twenty, or a hundred cross breeds which cannot be matched for weight of fleece and carcass by the same number of Downs, and at the same time leave the point as undecided as ever. Every practical farmer will at once see that it is very possible for a given extent of land, and quantity of food, when stocked by Southdowns to produce a greater aggregate weight of wool and carcass, and consequently to be the more profitable, while at the same time he may admit that an equal extent of land and food stocked with a smaller number of cross breeds may produce *individual* weights which may be greater, though the aggregate may be considerably less. I can have but one motive in coming to a decision adverse to the cross, it has been forced upon me by experience, and in arriving at it I have been reluctantly obliged to give up long cherished prejudices and prepossessions in its favour. I would beg my brother farmers, who possess flocks of Southdowns, to pause before they take a step which is easily taken, but which will require years before it can be retraced.

I have omitted to state that after the first year the weight of the cross bred fleece does not so much exceed that of the Down as from its appearance would be anticipated, it is not what is technically called a weighing fleece, what it gains in *length* of staple it very much loses in *closeness*.

I think it very possible by selection to obtain a flock of Southdowns, with fleeces possessing sufficient length of staple for combing, and weighing but little, if any, less than those of the cross breed.

Thinking it right that a letter of this description should be authenticated, I subscribe myself, your obedient servant,

JOSEPH TANNER.

Urchfont, near Devizes, Wilts.





THE GOODWOOD CUP.

The Goodwood Cup, value 300 guineas, is indisputably an exquisite design by Mr. Edmund Cotterell, and manufactured by the Messrs. Gerrard, of Pantion-street, Haymarket, whose celebrity in works of art of this description is generally allowed. The prize, which is of solid silver, was spontaneously offered as a present, by a deputation from Mr. Ferguson, the owner of that celebrated Irish horse, Harkaway, who won it, to his Grace the Duke of Richmond, immediately after the race, who most graciously declined it; as he deemed it a bad precedent for the owners of winning horses racing at Goodwood, or elsewhere, where the races are contested on private property to affix their laurels to the brows of others.

The subject of the plate our readers will at once discover to be an Eastern one, than which to demonstrate attachment to the horse nothing could be more pre-eminently characteristic, for what can surpass in affection the manifestations of regard in the Arab to his steed? Crichton beautifully observes, when speaking of the Horse of the Desert, that if the most valuable conquest of man over the animal creation be that of this noble quadruped, which shares with him the fatigues of industry and the glory of war, no nation merits that distinction better than the Arabs. The care and affection which they bestow in breeding and rearing it, and the decided predilection with which it is constantly regarded, are founded not merely on its utility to them in their predatory and wandering life, but also on an ancient prejudice which induces them to consider horses as beings endowed with generous sentiments, and an intelligence superior to that of other animals. They suppose that these noble creatures, so serviceable in the cause of Islam, have obtained, through Mahommed, the blessing of God and an occult capacity to read or repeat tacitly every day some verses of the Koran. It was one of their old proverbs, that after man, the most eminent creature is the horse: the best employment is that of rearing it; the most delightful posture is that of sitting on its back; the most meritorious of domestic actions is that of feeding it. They were taught by their Prophet to believe that it was originally predestined for their special service. "When God" said he, "wished to create it, he called the south wind, and said, 'I desire to draw from out of thee a new being; condense thyself by parting with fluidity,'—and he was obeyed. He then took a handful of this element, now become tangible, and blew upon it, and the horse was produced. 'Thou shalt be for man,' saith the Lord, 'a source of happiness and wealth; he will render himself illustrious by ascending thee.'" The "brood mares" were particularly recommended by Mahommed to his disciples, "because their back is the seat of honour, and their belly an inexhaustible treasure. As many grains of barley as are contained in the food we give to a horse, so many indulgences do we daily gain by giving it."

In giving a minute description of the group which constitutes our engraving, we may conclude in the language of a respected contemporary, that the four figures comprise a Turk, an Arab of the Desert, and a mare and foal, congregated beneath the branches of a date tree. The Turk, whose costume denotes a man of high rank, is endeavouring, by splendid offers of money, cloth, and arms, to induce the Arab to sell his mare; but the latter, in accordance with the proverbial attachment of his race to his favourite companion, resolutely refuses to yield to the rich temptations. The Arab is seated on his carpet on the sands of the

desert, smoking his oriental pipe, and with his hand waves back his anxious customer. The expression of the countenance of the Turk denotes his strong desire to become possessed of the favourite steed, while the calm determination of the son of the desert to keep his mare as "a pearl above all price" is equally striking. The figures are beautifully proportioned, and the symmetry of the mare and foal, with their distinctive features, are equally well preserved, and most minutely and elaborately finished. The costume, too, of the male figures is correct, and all the adjuncts, including the date tree and its foliage, true to nature. The light and shade, with the outlines of the figures, are strongly marked by the ingenuity of the manufacturer. Upon the whole, the work may be pronounced in the highest degree creditable to the taste and skill of all parties engaged in its production.

LIQUID MANURE.—OPINION OF THE LATE T. A. KNIGHT, ESQ., OF DOWNTON.—"I have shown, in a former communication," said the late president of the Horticultural Society, "that a seedling plum stock, growing in a small pot, attained the height of nine feet seven inches in a single season, which is, I believe, a much greater height than any seedling tree of that species was ever seen to attain in the open soil. But the quantity of earth which a small pot contains soon becomes exhausted relatively to one kind of plant, though it may be still fertile relatively to others, and the size of the pot cannot be changed sufficiently often to remedy this loss of fertility; and if it were ever so frequently changed, the mass of mould, which each successive omission of roots would enclose must remain the same. Manure, therefore, can probably be most beneficially given in a purely liquid state, and the quantity which trees growing in pots have thus taken under my care without any injury, and with the greatest good effect, has much exceeded every expectation I had formed. I have for some years appropriated a forcing-house at Downton to the purpose of experiment solely upon fruit-trees, which, as I have frequent occasion to change, the subjects on which I have to operate are confined in pots. These at first were supplied with water, in which about one-tenth by measure of the dung of pigeons or domestic poultry, had been infused, and the quantity of these substances (generally the latter) was increased from one-tenth to one-fourth. The water, after standing forty-eight hours, acquired a colour considerably deeper than that of porter, and in this state it was drawn off clear, and employed to feed trees of the vine, the mulberry, the peach, and other plants; a second quantity of water was then applied, and afterwards used in the same manner when the manure was changed, and the same process repeated. The vine and the mulberry being very gross feeders, were not likely to be soon injured by this treatment; but I expected the peach-tree, which is often greatly injured by an excess of manure in a solid state, to give early indications of being over-fed. Contrary, however, to my expectations, the peach-tree maintained at the end of two years the most healthy and luxuriant appearance imaginable, and produced fruit in the last season in greater perfection than I had ever previously been able to obtain it. Some seedling plants had then acquired at 18 months old (though the whole of their roots had been confined to half a square foot of mould) more than eleven feet in height, with numerous branches, and have afforded a most abundant and vigorous bloom in the present spring, which has set remarkably well, and those trees which had been most abundantly supplied with manure have displayed the greatest degree of health and luxuriance. A single orange-tree was subjected to the same mode of treatment, and grew with equal comparative vigour, and appeared to be as much benefited by abundant food as even the vine and the mulberry-tree."*

* Transactions of the Horticultural Society, vol. 2, p. 127.

ON CRIB-BITING.

By G. HOLMES, ESQ., V. S., THIRSK, YORKSHIRE.

(From the Veterinarian.)

It may, perhaps, be thought presumptuous in me to offer an opinion as to what is the cause of the disease or habit in the horse commonly known by the name of *crib-biting*; but it is a subject which concerns every one that has to do with horses; and none more than the veterinary surgeon.

There seems to be a variety of opinions as to what is the cause of crib-biting. Some persons consider it to depend upon a diseased state of the stomach. Others attribute it to long abstinence from food, when the animal, feeling a gnawing pain at the stomach, arising from a want of food, this viscus is supposed to collapse; and, to prevent these unpleasant sensations, he draws in a quantity of air, which serves to distend this organ. Others, again, maintain that the horse learns it from seeing other horses cribbing: while some suppose it to result from eating dry and stimulating food, thus overcharging the system with blood; and a few attribute it to feeding on mouldy hay, and musty oats. In fact, so numerous and so varied are the opinions of practitioners on this subject, that it is difficult to arrive at any thing like a just conclusion.

I confess I do not think that crib-biting is a disease in its first stages; but it is a habit acquired by young horses, and one that is very rarely met with in old ones, or such as have been for any length of time in the stable. Let us for a moment reflect on the important change which takes place when a young horse is brought from grass, where his whole time has been taken up with his companions, in observing the various objects around him which naturally attracted his attention; or eating, eighteen or twenty hours out of the twenty-four. I believe every one will admit that they never saw a young horse take to crib-biting, or any act that simulates it, in the fields. The reason I think, is very obvious, viz., that he has always something to amuse him.

We will now cursorily pass in review the opinions that have been held. And, first, that of the practitioners who assert crib-biting to be produced by a long abstinence from food. In a state of nature, the stomach always contains a certain quantity of aliment; but when the horse is stabled, it is given very irregularly; consequently this viscus is frequently without any thing in it, which causes it to collapse, and this is followed by the unpleasant sensation before spoken of, and to overcome which the horse takes to biting the crib. During this act a quantity of air passes into the stomach and distends it, and this satisfies, to a certain degree, the craving appetite, or, at least, allays the gastric irritation. But I would ask, where are the horses that are fed more regularly than the race-horse and the hunter? and what horses are more subject to crib-biting than these, particularly the race-horse?

To this must be added, the fact, that a crib-biter generally cribs the most when he is feeding. I have frequently seen them do it the whole time they have been eating their food. I cannot, therefore, think that this is a cause, or has anything whatever to do with it. I state this, although Professor Coleman, whose opinion on most matters connected with the horse we highly esteem, considers it to be the sole cause in ninety-nine cases

out of a hundred; and yet every one knows that in feeding racers and hunters the greatest regularity is observed—in fact, five minutes with them is an object.

I am also equally bold in asserting my conviction that the eating of mouldy hay or musty corn is not a cause of, or has any thing to do with crib-biting. My proof is that the race-horse, which is fed upon the very best of provender, is, strange to say, the most addicted to the act; while on the other hand, the cart-horse, who frequently has the worst provender set before him, seldom becomes a cribber.

As to the opinion of those who suppose cribbing to be produced by horses standing in the stable with others that have acquired the habit, this I allow, may be the case now and then with young horses—such as have lately been brought from the field, and compelled to stand in the stable for any length of time; but I have never known a horse that had been domesticated for two or three years take to it from seeing or standing by the side of another who was a cribber. I have known crib-biters stand in stables with eight, ten, or twelve horses, and not one of these ever became a cribber.

I think it a very rare case indeed, that ever an old horse becomes a crib-biter, let him be placed where he may. Nevertheless, there is against me the evidence of three veterinary surgeons, in a case lately tried at York, in 1838 (*Freer v. Hudson*). They aver, that old horses are as likely to become crib-biters as young ones. One of them said, that when a horse was perfectly free from cribbing, or any of its symptoms, on one day, he was liable to become a crib-biter on the next, and had done so. This was in the case of a horse nine or ten years old. How far this statement is correct those who are acquainted with the diseases of horses will be best able to judge.

I hope I have stated sufficient to shew, that crib-biting does not proceed either from abstinence, had provender, or imitation. How far my professional brethren and the public may agree with me I know not; but if my own opinion, which I shall shortly state, is incorrect, I hope that some one, more able and better qualified than I am, may be induced to give us his views upon so important a subject; my only object being to make the public better acquainted with its causes and effects, and upon what grounds a horse is rendered unsound by it.

I believe, then, crib-biting to be a habit which takes place in consequence of the change which is produced in the animal when brought from a state approaching that of nature into an artificial one,—a state of domestication. He is taken from an open field, where he had nothing to do but to feed and gaze about him, and amuse himself by an occasional gallop. The food which he there gathers is of such a character as requires him to be almost continually eating; and when his appetite is satisfied, he has his companions and surrounding objects to amuse him. One thing having lost its attraction, another presents itself; and thus his time is constantly occupied, and never becomes burthensome to him.

But observe how widely different the situation in which he is afterwards placed! He is put into a stable, which is a prison to him. There he stands perhaps two or three and twenty hours out of the twenty-four; or sometimes for weeks, or months is never out of it. The provender placed before him is of a dry and stimulating nature. He can no

longer roam up and down the fields for his natural food, which it took him so much time to collect; but a quantity is put before him, and of that nature, too, that a little serves him, in comparison with what he used to crop in the field. In the stable he will probably be eating only three hours out of the twenty-four.

Allowing, then, the former statement to be correct, viz., that the animal is eating twenty hours out of the twenty-four, there remains a balance of seventeen hours. Is it not natural to suppose, that when placed in a situation so different from that to which he had previously been accustomed, he should acquire some habit, such as crib-biting and particularly as he is a young horse? When a colt is taken up from grass, and placed in the stable, having nothing to amuse himself with, his manger is the first and most convenient thing within his reach. The top of this is generally round and smooth. He begins first to lick it. I think that all will bear me out in this remark, that the horse usually or always licks before he takes to cribbing. This licking pleases him by occupying his attention; and by the motion of the tongue the glands are excited to throw out an increased quantity of saliva. This habit continues for some time, perhaps a fortnight or three weeks, or even a month or more, as horses vary much in the length of time they practise it.

It is very important to know how long the horse generally is acquiring the habit of crib-biting, and the question ought to be set at rest by veterinary surgeons, if it be possible; for it is a constant matter of dispute between buyers and sellers—the latter declaring that the horse was free from the complaint when in his hands; whilst the buyer as unhesitatingly asserts, that he observed him to be a cribber the second or third day, or perhaps a week at the utmost, after he got him. The question then commonly asked by the court is, How long is the horse acquiring this habit? My own experience teaches me that young horses *lick* a fortnight or three weeks before they take to cribbing; and as to old horses, I have before said I do not remember any one to have become a crib-biter after having been domesticated for two or three years.

I hope the Gentlemen of the Association will take this point into their serious consideration, and endeavour to set at rest the various and conflicting opinions at present existing as to *How long a horse is in acquiring this habit*.

After the horse has been licking the manger for a period varying from two to three weeks, he generally begins to crib; but this is not always the case, as I have known horses to be lickers for years, and never become cribbers. He takes hold of the upper part of the manger with his teeth, and by making this a fixed point, there is a partial vacuum formed. The air being then drawn in by the mouth, passes thence into the stomach—which nature doubtlessly never intended—and thus the animal is predisposed to certain complaints which render him unsound.

It may be said by some, Why does one horse take to cribbing, while another, placed in precisely similar circumstances, remains free from it? I answer, because all horses are not of the same disposition. Among human beings, some will be found who are perfectly at ease and happy in any situation; while others, in the same circumstances, would make their lives one continued period of misery. So it is with the horse; the disposition of one differs considerably from that of

another. While one feels regardless of everything around him, another is never easy without something to amuse himself with: *this I conceive to be the sole cause of crib-biting*.

The best preventive that I know of is, not to let the animal stand in the stable too long. If this cannot be accomplished, he should be placed upon *pulley-reins*, so that he cannot reach the manger. I am convinced that if this method were adopted it would be the means of preventing many horses from being cribbers. I know not of any particular remedy for a horse after he has become a crib-biter, excepting the *neck-strap*, which is generally used for that purpose.

I have been told that cutting off a part of the tongue will be effectual in the worst of cases; but I have never tried it, and hope I never shall be induced to do so; nor have I ever seen it tried. It may have the desired effect; for doubtless when a portion of the tongue is taken off, the power to draw in the air does not exist as before; but it is an operation that I should never think of performing; for, by endeavouring to remedy one evil, we are creating another; to say nothing about the *inhumanity* of the act.

As to *soundness*.—There needs little to prove, that a horse that is a crib-biter is, in every sense of the word, an *unsound* one, although I believe that this is denied by some veterinary surgeons. A horse that is a crib-biter has certain symptoms, besides that of biting his manger, by which he can be immediately recognized. He seldom or never carries much flesh. His coat is staring, and generally long. This proves the sympathy that exists between the stomach and the skin. The state of the skin is only the effect; the condition of the stomach being the cause, and that arising from a foreign body being placed there.

There can be no doubt that the powers of digestion are considerably weakened, and the animal is thus predisposed to various diseases, such as spasmodic and flatulent colic; and this for the reason already assigned,—that every time the horse cribs he draws a quantity of air into the stomach, which is an organ made to receive food, and not atmospheric air. In addition to this it may be remarked, that the stomach of the horse differs from that of man and other animals. When air or other matter once enters his stomach, he has not the power to expel it by the mouth again, in consequence of the strong muscular fibres that are arranged in a valve-like manner at the cardiac orifice.

Since the air occupies space, the same as the food does, the stomach has two bodies instead of one to contract upon. Its parities are of course preternaturally distended, and in process of time must be materially weakened. The horse is likewise subject to colic from the same cause,—the air which passes from the stomach into the bowels—and which disease frequently proves fatal if not promptly attended to. After what has been advanced, I think few will be inclined to dispute the position, that crib-biters are, in every sense of the word, *unsound*.

I do not deny that a horse may work well, and remain in tolerably good condition, provided means are used to prevent his cribbing; yet a horse that is a cribber I should consider to be worth, in a public market, not more than one-third of the value of a sound one; although he may be as useful for work as one that is free from it, if preventives are used.

I hope it will not be considered I have taken up too much of your invaluable time in thus freely stating my opinions. My motives are solely to elicit information for myself, my professional brethren, and the public in general. If therefore any beneficial results are derived from the foregoing statements, my object will be fully attained.

I am, &c.

LABOURERS' FRIEND SOCIETY.

FROM THE LABOURERS' FRIEND MAGAZINE.

With reference to Somersetshire, your committee would sum up the report in the following graphic language of Captain Scobell, whose indefatigable efforts in this cause have been crowned with universal success:—

"Show me the place where it has *not* succeeded! From every quarter I am receiving communications upon the system of field gardens; most frequently, I admit, in the shape of inquiries, but often, also, with statements, showing that it is beginning in all directions to bring forth fruit tenfold, that it is spreading from parish to parish throughout the country, and that soon there will not be a parish without it. Look at the neighbourhood of Bath, for instance, where thousands are now occupying land under this system. Look at Wells where there is a bright example of its benefits, in a large tract especially devoted to its purposes, under the eye and fostering patronage of the venerable prelate in the chair. Look at Taunton and Wellington, where it is advancing most auspiciously; look to the South, by Crewkerne and Ilminster, where some on the platform can report its favourable progress; look again on the north, by the shores of the sea, where it is thriving under the influence and patronage of a relative of our worthy diocesan. And now let me turn to my own neighbourhood. Here there is not only no symptom of failure or decay, but every year adding to its prosperity, and showing a tendency to durability—where diligence in manuring and cultivating, where improved character, and where feelings of laudable independence, give testimony to its efficiency as a provision for the poor man, and as an improver of his morals. To prove this, I will mention a fact. There is in the parish of Farmborough (in which I beg to state I have not a foot of ground), a tongue of land adjoining my parish, and containing about fourteen families. This piece of ground I rent from General Popham. The people had the reputation of being disorderly; in fact, I know that in times past some of them had been transported. When I determined upon taking the land, some persons said to me, 'You had better leave these people as they are; you had better not take them in hand: they will bring your system into discredit; they will not pay you your rent; in short, you will be working with bad tools.' But I was not to be deterred; I took the ground; I let it as to my own tenants. I have no reason to complain of their want of punctuality in the payment of their rent; and from that hour to this, not one individual amongst them has broken the laws of his country. Now, let us look at this matter in the light of a charity. Charity, to be real and effective, should not debase a man; and here is the merit of this system—which consists in the Christian charity of *letting* (not giving) land at a reasonable rate, to enable the industrious poor man to obtain an independent living. An acre of land let out in field gardens, at a fair charge of forty shillings, or three-pence a pole, produces a profit of twenty pounds! and mark, if any man lets out ten acres in this manner, he puts no less a sum than two hundred pounds a year into the pockets of the poor! What ordinary charity can equal this? Nature, my friends, may be compared to a great national bank, and by letting every man have a share, and by thus giving him an interest in it, we enable him to serve himself, and to serve the rest of the community at the same time."

PATENT ROTATORY STEAM-ENGINE.

Several months have elapsed since we last noticed this remarkably simple application of steam. Not having studied the subject, we were not prepared to discuss its merits, and, therefore, left it to prove its powers and utility by the test of time. We had no idea, however, of the host of opposition which this rotatory engine would meet with, from motives which need not here be discussed; but it is evident that this important arrangement for steam power would have been lost to this country, had not the parties concerned in bringing it forward possessed something more than common perseverance. On Saturday last, the 29th ult., we were, with many other persons, highly gratified by examining, while at work, the rotatory engine attached to the thrashing machine at Mr. Allan's farm at Pilton, near Granton, about two miles from Edinburgh. The engine was lately erected by Mr. Ruthven, and besides driving a five-horse thrashing machine, it works, at the same time, two sets of elevators, a hummelling machine, revolving 400 times per minute, and two pair extra fanners. Although the engine is the smallest size made, it has a superabundance of power for all the above work, which we saw it execute. Mr. Allan informed us that it does all the work in a most satisfactory manner, and beyond his most sanguine expectations; that it will thrash ten bolls of oats per hour, and at an expense of not more than one cwt. of coals; it employs six servants hard at work bundling the straw as it comes from the mill.

Mr. Allan thinks the engine highly adapted for farm purposes, from its simplicity, and that ere long, no farmer of fifty acres will be without one, as any farm-servant may easily manage it. The chimney stalk of Pilton is 50 feet high, but that is not necessary, as the patentee has seen them in the United States not exceeding 18 feet. Mr. Allan intends adding straw-cutting and grain-bruising machinery to the engine, and apparatus for steaming food for his cattle.

Our scientific readers who may examine it at work, will be not a little surprised to see the simplicity and effect of this application of steam power. To those who feel interested in such improvements, we shall endeavour to give a brief explanation, which may also interest those who have it not in their power to inspect it.

All are aware that steam power is produced by converting water into steam, but all do not agree in the mode of its application. Thus we have steam engines whose parts weigh upwards of two hundred tons, all considered necessary *before* the power of the steam can be made available. One engine within a few miles of this city (Sir John Hope's at Stoney Hill), has a beam of cast iron for conveying the motion and power from the piston, the weight of which is above sixteen tons, and the complexity of the parts are clearly illustrated by an engraving of it, published some time ago.

In the rotatory engine, which we shall now attempt to describe, and which does not weigh *half a ton*, it may be said there is nothing to consume the power but the work performed. The engine, which consists of two round concave plates of cast iron, bolted together so as to form a hollow case five feet diameter, and about the size of a carriage wheel, is placed upon its edge; a hollow cast steel axle, passes through the centre of the case, and on this axle two hollow cast steel arms are fixed, which revolve in the case. On one end of the axle outside the case is

fixed an iron pulley, from which the power is conveyed by means of a belt and drum to the thrashing machine. The steam, or power, passes from the boiler into the hollow axle by a small wrought iron pipe, from thence into the arms whence it is discharged at each end into the case, thereby producing rotatory motion, and giving out power, and from the case the steam passes to the air. The arms being fixed on the axle, carry it round, and of course the pulley on it, at a velocity which is adapted to the work required.

Many have supposed that this arrangement of steam power could only be available for small engines; we are, however, assured by Mr. Ruthven, that the great value of this rotatory, is its application to large engines; and he will engage to make them of one or two hundred horse-power, and guarantee their power to that extent. For locomotive carriages they will produce any speed required without either crank or toothed wheel and with a great economy of fuel and relative expenses.

We certainly consider this application of steam deserving of great attention; Mr. Craig, who has the merit of introducing the engine into this country, and Mr. Ruthven and his son, who have devoted their attention and exertions to construct it, and bring it into use, ought at least to be spared that opposition which they have hitherto met with, chiefly from Savans who have never deigned to look at it. It is also fair to state Mr. Allan's merit in not yielding to the great interest employed to prevent him from adopting it, and the more so, as, we believe, this identical engine, boilers, pump, and every thing connected with it, were erected at Mr. Hepburn's at Whittingham; and such was the opposition made to it, that Mr. Ruthven agreed to remove it. Mr. Allan is now, therefore, in possession of the first rotatory steam-engine erected in this country for thrashing. We understand that a rotatory engine of twenty horse-power will be erected at Mr. Hogg's paper-mill at Colinton in a few weeks, and another in London, for Mr. Douglas, of America Square.

Mr. Allan kindly allows the engine to be inspected.—*Edinburgh Chronicle*.

AGRICULTURAL USES OF BONE.—(From a Lecture delivered by Mr. W. H. B. Webster, at the Woodbridge Literary Institution.)—"I come now to a part of the subject, where silence perhaps would best become me, being unqualified to give an opinion—having little practical experience on a point where experience is everything and theory nothing. I wish to speak with deference, but still the facts of the case are so strong and clear, that nothing I think can rebut them. Is there any one interested in agriculture?—to him I would say, look at the table of the composition of the bone—and he will see a reason for its employment, and the cause of its beneficial effects. It makes the desert bloom, and gives a verdure to the otherwise barren sands. As I have said before, in speaking of the domestic uses of the bone, that every pound of bone contains $1\frac{1}{2}$ pound of flesh; therefore for every cwt. of bone carted upon the land, he has 125 pounds of flesh. And is not animal matter the food of plants? If it be then bones are among the best of manures, containing the greatest quantity of such matter in the smallest space. The question of boiled bones has been mooted, and some have gone so far as to recommend that the ground or crushed bones should be well boiled to extract the animal matter—to make broth and soup for the pigs—and expecting the bones at the same to be much improved for the land. False facts are certainly the bane of science, and more egregious folly could not well be found. If liquid manures be good food for plants, if animal matter be useful—if oil, blubber, sparts, fish, any or all of these be useful in any degree—then is the animal

matter of bones the beneficial part. But, supposing rich broth is made from the boiled bones, and a person were to water the earth with this broth, as recommended by Mr. Knight, the great and celebrated Horticulturist, the plants would thrive most luxuriantly, while the bone earth or ash would benefit a crop but little in comparison therewith. All we can say is, if the opinion of boiled bones being best is correct, that plants like the bones cooked and their meat boiled. If it is the bone earth or phosphate of lime that is so useful, then let farmers get the earthy phosphate of lime, which they can do in great abundance, and at a very cheap rate. It is worthy of trial undoubtedly, and may be a serviceable adjunct manure in some cases. It deserves serious consideration as to its value as a manure, especially since gypsum, a much more unlikely material, has been said to be beneficial. Thinking it might be very useful to the agriculturist to know the value of the bones he employs—unless he should prefer boiled bones—I will just mention how he may ascertain their state. Take 3 ounces of well dried bone dust, put it in a small iron ladle or pot, heat it to redness, and keep it so for half an hour, stirring up the bone dust repeatedly. The heat will destroy all the animal matter, and leave the bone ash, rather more than 2 ounces in weight. If there is a greater weight than this remaining, the bones were deficient in animal matter or adulterated. Again take 3 ounces of bone dust, put in 3 ounces of muriatic acid, diluted with 3 or 4 ounces of water, let the bone dust remain two or three days, then decant off the clear liquid, and boil the residue animal matter in about half a pint of water—all of it will dissolve into a clear jelly—any sediment remaining undissolved is foreign matter. If chalk or lime be contained in the bone dust, a little vinegar will readily detect it. I merely throw out these as suggestions to the farmer to act upon, and to assure him chemical knowledge is as perfect and correct upon this point as any mathematical demonstration."

REMARKABLE ANECDOTE OF A DOG.—The anecdotes given of dogs saving the lives of persons in danger of drowning, are so numerous as to be familiar to every person. One cannot reflect on the innumerable instances of the love and usefulness of this animal, without being grateful to Providence for having given to man a creature capable of many of those noble and disinterested feelings, which we are accustomed to appreciate so highly in our fellow creatures, and almost to look upon as constituting the perfection of the human character. At a convent in France twenty paupers were served with a dinner at a certain hour every day. A dog belonging to the convent did not fail to be present at this regale, to receive the odds and ends which were now and then thrown to him. The guests, however, were poor and hungry, and of course not very wasteful, so that their pensioner did little more than scent the feast of which he would fain have partaken. The portions were served by a person at the ringing of a bell, and delivered out by means of what in religious houses is called a tour, which is a machine like the section of a cask, that by turning round upon a pivot exhibits whatever is placed on the concave side, without discovering the person who moves it. One day this dog, who had only received a few scraps, waited till the paupers were all gone, took the rope in his mouth and rang the bell; his stratagem succeeded. He repeated it the next day with the same good fortune. At length, the cook, finding that twenty-one portions were given out instead of twenty, was determined to discover the trick, in doing which he had no great difficulty, for lying perdue, and noticing the paupers as they came for their different portions, and there was no intruder except the dog, he began to suspect the truth, which he was confirmed in when he saw the animal wait with great deliberation till the visitors were all gone, and then pull the bell. The matter was related to the community, and to reward him for his ingenuity he was permitted to ring the bell every day for his dinner, on which a mess of broken victuals was always afterwards served out to him.—*Fraser's Rights of Instinct*.

MUSEUM OF ECONOMIC GEOLOGY.

It may be in the recollection of our readers that we recently called their attention to the Museum of Economic Geology, and we have since endeavoured to procure further information on the subject. Some time since we announced that Government had decided upon the formation of such an establishment; and we mentioned that, under the direction of the Commissioners of Woods, the superintendence of its details had been confided to Mr. De la Beche, who is now, in fact, engaged in making it available for public use. This Museum, as we first stated, is established for the purpose of exhibiting the application of geology to the useful purposes of life. We are given to understand that the house at Charing-cross, first appropriated to the reception of the collections, having become insufficient for those actually made, Government have determined to give to this institution every extension of which it may be capable, and, in consequence, have directed that the house adjoining the present Museum, and lately occupied as the Earl Marshal's Office, should be properly fitted up, solely for the reception of such collections; while the two houses being thrown into one, that which was previously and temporarily occupied, should be retained for the other, and requisite offices.

Upon inquiring, we find that the collections will consist of sections and plans of mines in all parts of the United Kingdom, and of models of machinery, exhibiting, as well the mines, the modes of working them; these are accompanied by specimens, often of large and of illustrative sizes, of the various ores, and different kinds of coal, raised in the country. Another important feature in the Museum will be the opportunity afforded to architects, engineers, and builders, of inspecting the various kinds of building materials found in Great Britain and Ireland—specimens of which, collected by the Commissioners employed in the selection of stone for the new Houses of Parliament, will be there deposited, illustrated by notes detailing their physical and chemical properties—the respective localities of the quarries—the names of the proprietors—the cost of transport—in many instances the power of supply—with other particulars, which cannot fail to be of value to practical men. These specimens, unless we are misinformed, are in duplicate; and while one set will be kept in a fresh state in the Museum for general inspection, the other, for the sake of more perfect illustration, will be exposed outside the building to all the effects of a London atmosphere.

Among other obvious applications of geology to economic purposes, that of agriculture will be kept fully in view; and ample collections are intended to be made to illustrate this most important subject. The selection of cheap and durable materials for roads is at length also become an object of great importance, and specimens are already in course of collection, with especial reference to this object.

In order, however, to promote the utility of this establishment beyond that which would be afforded by mere collections of the kind above alluded to, Government have given permission that lectures on chemistry, illustrative of geology and mineralogy, as applied to mining, metallurgy, and agriculture, should be delivered at the Museum by the Curator, the collections being made available for purposes of illustration.

It having been represented that no public establishment at present exists for the analysis of ores, or chemical examination of metals and other mineral substances employed in the arts and manufactures, provision has been made that such analysis and examinations may be conducted at the Museum by the Curator.

For the purpose of carrying the various and important objects of this institution into full effect, Mr. Richard Phillips, so well known for his skill and experience in analytical chemistry, has been appointed Curator of the Museum, and to deliver the lectures and conduct the analyses to which we have alluded. We feel confident, as we recently stated in making the first announcement of this appointment, that a more proper and efficient selection could not have been made.

In addition to the above intelligence, we have ascertained that the British Association for the Advancement of Science have recommended to Government that a national depository for the preservation of documents recording the mining operations of the United Kingdom would be highly beneficial to the country; great loss of life and destruction of property having resulted from the imperfect preservation of such records. Government we are informed have, in deference to the wishes of the mining interest, directed that suitable accommodation for the preservation of these records shall be provided at the Museum for this purpose.

We cannot but express our conviction that the varied information which will arise from the free access of the public to this establishment must deeply interest many persons who are occupied in pursuits apparently dissimilar and unconnected, and that the institution will ultimately become one of great national importance.—*Mark Lane Express.*

GRAND CAIRO.—HATCHING OF CHICKENS.

—This is an art for which the Egyptians have been long celebrated, and I proceeded to Alsaba-al-Daba to see the operation. The number of eggs necessary is 100,000. The period set apart for this purpose is from January to April, which may be considered the summer months in this country. The skill required consists chiefly in supplying a requisite degree of heat, the first rule being to bring it to a temperature as nearly as possible to nature, or never to allow the eggs to be warmer than the human eye, when they are laid on it, can endure without pain. What is singular, thunderstorms occasion the eggs to miscarry, and the chickens hatched are often defective in some of their members. In consequence of their being thus hatched by art, it frequently happens that the birds are not so perfect as those produced by the common course of nature. The ovens are built under ground, in two rooms fronting each other, five or six in a row, with a narrow entry or passage between, and about three or four feet in height, having holes at the top, which are shut or opened according as the heat requires to be increased or diminished. They are warmed with a smothering fire of mules' manure and chopped straw for about ten days, at which period the eggs are shifted from the lower rooms where they had been previously laid, and spread in the upper, and turned daily, and a very slow fire is kept, in a channel running along the avenue near the mouths of the oven. About the twenty-second day the process is accomplished, when the chickens break the shell, and the spectacle these ovens then exhibit is highly amusing. The number of birds annually produced, on a calculation that two-thirds of the eggs are hatched, amount to 100,000,000, and the Pacha comes in for a titling of the produce. There is something exclusively favourable to this operation in the climate of Egypt. I might allude here to a similar curious process adopted in France, which consists in putting eggs into a small basket and suspending it over a stove heated by hot mineral water, the eggs being turned daily. And also a mode adopted by the Chinese in hatching spawn of fish. Fishermen collect on the surface and margin of the waters those glutinous masses containing the spawn, fill with it the shell of a fresh hen's egg previously emptied, stop up the holes, and put it under a sitting fowl, and in a certain number of days the shell is broken in water warmed by the sun, the fry presently hatched, and kept in pure water till they are large enough to be thrown into a pond with the old fish.—*Travels in Egypt, &c., by W. Rae Wilson.*

ZINC MILK-PAILS.—Among the patents lately taken out in America, one is for a process for extracting cream from milk by the use of zinc. It is said, that if zinc be put into the milk pail, or the milk be put into a vessel made of that substance, the same quantity of milk will yield a greater proportion of cream, or butter.—*Repertory of Inventions.*

RUSSIAN FARMERS.

The new work by Mr. Venables, on the "Scenes in Russia," is very interesting. The purpose of the author's journey to Russia was to pay some visits to the family of his wife, who is a Russian. After reaching St. Petersburg, in a week from leaving London, and lingering a little in the capital, the tourist departed in July 1837 for Krasnoe, a village about 400 miles south of St. Petersburg and 150 miles short of Moscow. At this estate of his father-in-law he sojourned some time; witnessing the daily economy of the house, observing the habits of the serfs and their mode of life, and occasionally visiting the neighbouring gentry—fifty miles over bad roads being the drive to a dinner-party. The following is an account of the

AGRICULTURE IN RUSSIA.—The second day of our visit brought a decided improvement in the weather; and I had a drive with the General after breakfast in a low phaeton, to see a little of his estate, which consists of apparently sound good land, chiefly arable. The grass land will not bear a comparison with English pasture, and the crops of hay are very light, though they are here considered particularly good this year. The horses, sheep, pigs, and horned cattle, which compose the live stock, are small and of a very inferior kind; but I am told that the expense of improving them by a mixture of foreign breeds, is very much disproportioned to the profit thereby derived. The animals of every kind are necessarily housed at night, even in summer, on account of the wolves, which are very numerous and troublesome in this neighbourhood. In the morning the whole stock goes out to feed, and remains during the day under the protection of a herdsman, whose badge of office is a whip, which he carries over his shoulder, with a short handle and a long heavy lash trailing for several feet along the ground behind him. With this implement he soon reduces to order, and brings back to the herd any refractory animal which is inclined to stray—the want of fences renders his constant attendance necessary. There is an abundance of water and wood, birch, and Scotch and spruce fir, both for fuel and ordinary uses, on the estate, which also contains lime and brick earth.

HAY HARVEST.—The hay harvest, which began about the middle of July, is only just finished, (September) and the corn harvest is now proceeding actively. The hay harvest is tedious, owing to the large surface, in proportion to the produce, over which the scythe has to pass, though I am told that the crops this year were in many places three times as heavy as they were last summer. They have a few large meadows, but the greater part of the hay is procured from little patches of rough ground on the outskirts of a wood amongst the bushes, or from little hollows which are not cultivated owing to the water hanging in them. I have seen fifty mowers at work in one place, and one day they had a hundred and fifty mowing in one meadow. The hay is not in general dried in the field, but is loaded as soon as cut on waggons drawn by oxen, and brought into a large yard, or piece of ground adjoining the barn, and is there opened out to dry. They have no hayforks; but instead, they use the but-end of the scythe-handle, or a forked stick. The latter is the only implement they have for pitching up the hay into the barn. The hay is generally housed the day after it is cut; none of it is put into ricks. They make it, as soon as it is dry, into large cocks, under each cock they thrust crosswise two long stakes, leaving one end of each standing out; they then pass a rope round the cock and attach it to a horse, which draws the hay thus held together along the ground to the barn. When the distance is short, the trouble of loading and unloading waggons is thus saved, and two horses will in this manner bring in a vast quantity in the course of the day; the tenth cock, as it is brought in, is weighed and taken as the average. The whole quantity of hay made

this year at Krasnoe, not reckoning the stock laid in by the peasants, which must be considerable, was but one hundred and ninety-seven tons, all harvested in excellent order. The average value of hay in the country is about eight shillings and threepence per ton; sometimes however, it is as high as thirty-three shillings, and at Petersburg it rises occasionally to fifty-five shillings a ton; this however is considered a ruinous price.

CORN CROPS AND IMPLEMENTS.—All the crops this year seem very good, except the rye, the staple food of the country; it is generally thin and bad, and in many places a total failure; it is chiefly housed by this time; they began cutting it on the 15th of August, but the harvest this year is later than usual. Besides rye, oats are grown here in large quantities, barley and flax to a considerable extent, and a good deal of hemp; there are also a few peas, and some small patches of spring wheat, which however looks very unthriving; a few hops are to be seen around the villages, and potatoes and cabbages are largely cultivated for human consumption. The former vegetable has, I believe, not been introduced among the peasantry to any great extent till of late years; and even now they rely much more upon the cabbage, which they have a peculiar mode of pickling for winter food, since they cannot always preserve potatoes from the frost. * *

As soon as the corn is cut, it is dried on a sort of kiln, threshed out, and stored up in large bins in the granaries. Here there is a threshing machine worked by horses, but the flail is used by women as well as men. I have seen the peasants often threshing their own corn without an implement of any kind, merely taking up the sheaf by the lower end and beating the heads upon a spot of hard dry ground, swept clean as a threshing-floor. They dry their corn by fires in large open sheds built on purpose; but sad calamities are, as might be expected, the frequent result of this dangerous practice. All the agricultural implements in general use are rude in the extreme; the peasant's spade is a mere paddle of wood, sometimes shod with iron, but more often not; his plough is an ineffective instrument drawn by a weak pony, and his harrow merely consists of boughs fastened together with the thin branches cut off a few inches from the base, so as to form projecting teeth; his waggon does not contain three barrows load, but it is certainly as much as his miserable horse can draw. Every peasant is a petty farmer; and the wretched state of agriculture which exists is, I conceive, the natural consequence of the system.

CHARACTER OF THE ENGLISH PEASANTRY.—Hodge is now growing up into a tall, long, smocked-frocked, straw-hatted, ankle-booted fellow, with a gait as graceful as one of his own plough-bullocks. He has grown up and gone to service, and there he is, as simple, as ignorant, and as labourious a creature as one of the waggon-horses he drives. The mechanic sees his weekly newspaper over his pipe and pot; but the clodhopper, the chopstick, the hawbuck, the hind, the Johnnyraw, or by whatever name in whatever district he may be called, is every where the same. He sees no newspaper; and if he did he could not read it—and if he hears his master reading it ten to one but he drops asleep over it. In fact he has no interest in it. He knows there is such a place as the next town, for he goes there to the statutes and to the fair, and he has heard of Lunnion and the French, and Bonaparte, and, of late years, of America, and he has some dreaming notion that he should like to go there, if he could raise the *wind* and thought he could find the way, and that is all that he knows of the globe and its concerns, beyond his own fields. The mechanic has his library, and he reads, and finds that he has a mind, and a hundred tastes that he never dreamed of before. The clodhopper has no library, and if he had books in his present state they would be to him only so many things set on end upon shelves. He is as much of an animal as air and exercise, strong living, and sound sleeping can make him, and he is nothing more.—*Howitt's Sketches.*

THE POTATO.

(FOR THE LONDONDERRY SENTINEL.)

The potato is a native of South America, from which it was introduced into this country in the sixteenth century, by Raleigh. It was cultivated for a length of time in gardens as an ornamental plant. Its culture, however, soon spread as its properties became known, and it forms now a great part of the food of the inhabitants not only of this country but of Europe. The introduction of the potato into this country has been assigned by some political economists as the chief cause of the poverty and wretchedness with which it abounds; be this as it may, its importance as an agricultural plant is now well known and fully acknowledged, and it cannot be questioned for a moment that it has greatly lessened the hazards of famine, and added to the comforts of the labouring classes in the countries into which it has been introduced.

The potato belongs to the genus *solanum*, several species of which are cultivated in different countries, for their uses in domestic economy and the arts, while others are known as deadly poisons. Of all the species the most important is *Solanum tuberosum*—the tuberous rooted night-shade or potato.

The varieties of the potato are innumerable. They differ in their leaves and bulk of haulm—in the colour of the skin of the tubers—in the colour of the interior, compared with that of the skin—in the time of ripening—in being farinaceous, glutinous, or watery—in tasting agreeably or disagreeably—in the length of the stolones to which the tubers are attached—in blossoming or not blossoming—and finally, in the soil which they prefer.

The potato is reproduced by planting the tubers, and occasionally from sowing the seed which is produced on the stem. Climate, soil, and mode of culture to a certain extent produce changes in the nature and habit of the plant, but the innumerable varieties in cultivation cannot be attributed to this cause, being the result of raising the potato occasionally from seed as other plants.

The great number of varieties produced even from a single apple is astonishing. In an experiment recorded by Doctor Anderson in the communications to the Board of Agriculture, he says that the diversity was so great, that it could scarcely be called short of infinite. The potatoes were diversified prodigiously in regard to *colour* being of various hues; to *shape*, long, round, and knobbed in various proportions; to *size*, some of them being no larger than peas, while others exceeded the size of the largest pullet's egg; to *earliness*, some of them having completed their growth, would be entirely ripe before the month of August, while others were only coming into blossom in the month of October; to *prolificacy*, some yielding nearly a hundred, and others only three or four; to *mode of growth*, some running out to a great distance, others growing quite close to the stem, some growing deep down, while others rose to the surface; to *quality*, some being tough and watery, others dry and mealy, some very pleasing to the taste, others not eatable; and respecting *stems*, some produced a single stalk like a rod, others an immense profusion of stems, some very luxuriant, others extremely dwarfish. In short, continues the Doctor, it would take a volume to describe all their varieties.

New varieties being, therefore, so easily produced, it is not to be wondered that there are so

many in cultivation. With respect to choice of sorts, no directions can be given which would be of any service to the cultivator, as the names of the varieties are so arbitrary, and the same variety is not unfrequently known by different names in different districts. In selecting a sort for cultivation, attention should rather be paid to its properties, than to any local name. The varieties in cultivation at the present day are no doubt greatly superior to that from which they all originated, and it may be believed that the plant is yet susceptible of as great a degree of improvement as has yet been effected, were attention directed to raising new sorts from seed.

When the plants are propagated from the seeds, they require to be planted for several successive years before the tubers attain their full size, and hence it is that this method of reproduction is so seldom adopted. When they are raised at once from the tubers, they yield their full produce in one season, and this is, accordingly, the plan usually followed.

The mode of procuring new varieties from seed is simple, but tedious. Some of the largest and best formed berries, when fully ripe, which is denoted by the change of their colour, and by the stalk having become withered, are plucked, and the pulp separated from the seeds, which are then dried in the sun. These seeds are to be sown in the following spring, and the produce taken up early in October. They will then have nearly attained the size of small plums. The fairest and best are to be selected and kept secure from frost by thoroughly drying, and intermixing, and covering them with dry saw-dust or coal ashes. In the month of April following, they are to be planted in beds at a distance from one another of from fifteen to eighteen inches; and when the young plants are about two inches above the surface, they are earthed up with the hoe, and this operation is to be repeated several times during the season, that they may be kept clear of weeds. When they have arrived at maturity, which will be denoted by the decay of their stems, they are to be taken up in succession as they ripen, preserving only a limited number, and keeping the produce of each separate, otherwise an unmixed stock cannot be procured.—These are again to be sown in the following spring, and treated during their growth in the same manner; and by careful observation a judgment may now be formed respecting the value of the different sorts, when the superior ones only are to be reserved for seed and the others rejected. It is, however, better to preserve a sufficient number, keeping the produce of each separate, as before, as their permanent characters may not yet be fully developed. Thus it takes three years before an opinion can be correctly formed respecting the merits of each sort.

Some of the earlier sorts of potatoes do not blossom, and consequently do not, under ordinary management, produce seed. To procure blossoms and seeds from them it is necessary, from time to time, during the early part of the summer, to remove the earth from the roots of the plants, and take away the potatoes as they begin to form. By thus preventing the strength of the plant from being employed in forming tubers at the root, it will be directed to the stem and parts of fructification, and blossoms and seeds will accordingly be produced.

It is thus that new varieties of the potato are produced, and although the process is tedious, and attended with some trouble, yet there is every in-

ducement to make a trial. Nor is it from seed alone that improvements may be made in this respect. Every one who has bestowed attention to the culture of potatoes at large, must have observed that stems greatly more productive than others are to be met with in every field. And although this may sometimes happen from a circumstance in no way depending on *kind*, yet in general there is room to suspect it may be owing to some peculiar property not possessed by the others. The best of these individual stems therefore, ought to be picked up with care, and kept, the produce of each stem by itself, until their qualities be ascertained, when the best are to be selected for reproduction, and carefully kept for that purpose. It is almost incredible the great improvement that might be effected by paying attention to these circumstances, and the great additional quantity of produce which might thus be obtained.

Each potato contains a number of buds or germens, commonly termed eyes, from each of which a stem will arise. This gave rise to the common practice of dividing each tuber into a number of sets, each having, of course, one or more eyes, as being a more economical plan than to plant the potato entire. Particular parts of the potato are also preferred, the sets, for instance, taken from the top end being generally considered better for seed than those from the end attached to the stem; and when the potatoes to be used for seed are large, it is a common practice to use only the sets obtained from the top end, reserving the remaining part of the potato for consumption by live stock. When potatoes are cut for planting, the sets should be of sufficient size to nourish the stems which proceed from them during the first stages of their growth, for it is evident to any one possessed of the smallest degree of practical knowledge of the nature of vegetables, that the strength of the stem at the out-set depends in direct proportion upon the vigour and power of the set. The set, therefore, ought to be large, rarely smaller than a fourth part of the potato; and if the potato is of small size, one-half may be profitably used; at all events, rather err in giving too large seed than in making them too small; because by the first error no great loss can be sustained, but by the other a feeble and late crop may be the consequence.

Many approve of planting the potato entire; and this mode has certainly been gaining ground in this country of late. A greater security is thus provided against the occurrence of failure in the crop, but a much larger quantity of seed is required. The smaller and middle sized potatoes are preferred for planting whole; and perhaps the preferable plan is to use an equal portion of whole and cut potatoes; as, in the event of the cut potatoes not succeeding, there will be a sufficient quantity of the others for seed; and a considerable saving of seed is effected.

It is a generally received opinion that potatoes not fully ripened at the period of taking up the crop are more vigorous for seed; and it has also been recommended to cut the potatoes for seed a considerable time before planting; but the propriety of both these practices has been much questioned of late, and it cannot be regarded as settled at present.

The soil in which the potato succeeds best, is a light loam, neither too dry nor too moist; but if rich, it is so much the better. It may, however, be grown well on many other sorts of land, especially those of the mossy, moory and similar kinds,

when they are free from stagnant moisture, and have had their parts well broken down by culture and the application of a sufficient quantity of manure. Deep dark peat often produces large crops; and it is one source of great value in this plant, especially in this country, that it can be so successfully cultivated on newly reclaimed mossy land. In wet clays the return is inferior in productiveness and quality; and when repeated too frequently on the same soil, the potato becomes deficient in flavour.

Potatoes should, except in peculiar cases, be cultivated by the plough.—The cases in which spade culture may be advantageously adopted are in newly reclaimed land not yet entirely cleared of obstructions, and in steep banks inaccessible to the plough. Spade-culture should also be adopted by the cottier and small holder; but the mode of cultivating potatoes by this method is so well understood in this country, that any account of it would be unnecessary.

The potato belongs to the class of restorative and cleaning crops, and should therefore succeed a corn crop and be succeeded by another. Sometimes potatoes are planted upon land newly broken up from grass, in which case the ridge or lazy-bed system is employed. This is, however, a deviation from the rules already laid down, and cannot be recommended except on rough land not previously under tillage.

In the preparation of the land for potatoes, it is of importance to free it as completely as possible from root weeds, which cannot be so well extirpated afterwards, as in the culture of turnips and some other drilled crops, both because the horse-hoe must be expelled altogether at a time when vegetation is still vigorous, and because at no period of their growth is it safe to work so near the plants, especially after they have made some progress in growth. It is the earlier time of planting and of finishing the after culture, that renders potatoes a very indifferent substitute for fallow, and in this respect in no degree comparable to turnips.

As in the case of the summer fallow, the land is to be ploughed after harvest with a deep furrow in the direction of the former ridges, so as to keep it dry and prepare it for early tillage in the following spring: and the clearing out of head-lands and making channels across the hollow parts of the field must be attended to in order to convey off superfluous moisture. In spring, as soon as the other labours of the farm allow, and the land is sufficiently dry, it is to be cross-ploughed, and harrowed by repeated double turns of the harrow in every direction. The roller also is to be employed to reduce the soil; and all the root weeds are to be carefully collected and carried away to be formed into a compost as already described in the management of the summer fallows. The land is next ploughed in a direction crossing the last ploughing, or rather the ploughs may cross the field diagonally, because, as it is always desirable to make each alternate ploughing cross the previous one, and as the next ploughing which forms the drills will be in the direction of the former ridges, all the ploughings will thus be made to cross each other. After this ploughing the land is to be harrowed, and rolled, if necessary, the weeds being carefully collected and removed as before.

In most cases this preparation will generally fit the land for being formed into drills; but in certain cases another ploughing may be necessary,

or perhaps a single or double turn of the grubber may be substituted. The drills are formed at the distance of thirty-two inches from centre to centre. The manure is then conveyed to the field, and spread evenly in the hollows of the drills when the land is ready for the seed.

A liberal supply of manure is necessary to produce a good crop, unless the land is unusually fertile. That employed is chiefly farm-yard dung. It is not necessary that it should be so completely fermented as if intended for turnips; but such a degree of fermentation is obviously requisite as will ensure the complete decomposition of the manure after being applied to the land.

As soon as the manure is spread along the hollows of the drills, the potatoes are to be planted. The sets are placed ten inches asunder in the rows; and if whole and cut seed are both employed, they are planted by different persons, or by the same person going a second time along the drill, the sets being first placed at double the required distance. It is of importance that the sets should be placed in a direct line along the centre of the hollow space between the drills, as those placed out of this line are in danger of being injured by the after culture of the crop.

The sets are usually placed upon the manure, but some recommend placing them under it, as being the better practice. In the ascent of the shoot it naturally protrudes through the dung when placed over the set, and the numerous fibres extending from it must thus come much more readily into contact with the manure. The superiority of this plan has in many instances been quite apparent, but it is attended with some additional trouble.

The manure being spread, and the potatoes planted, the drills are reversed. When the soil is light, and the weather dry at the time of planting, the drills may be immediately rolled with a light roller to consolidate the earth, so as to prevent undue evaporation, which would have the effect of retarding the growth of the crop.

The usual period of planting is during the month of April and the first week in May. Some of the early sorts may be planted in March, but it is usually the end of April or beginning of May before the land can be prepared for the general crop. There are many instances of good crops being obtained after planting in the end of May or beginning of the succeeding month; but such late planting cannot be recommended. The produce from early planting is always superior in regard to quality, although the quantity may be less.

The quantity of seed depends upon the size of the potatoes. In general when the sets are of sufficient size, from twenty to twenty-four bushels will be required to the acre.

The after culture of potatoes consists in harrowing, hoeing, weeding, and earthing up the crop.

In a fortnight or more after planting, the whole field is to be harrowed. The effect of this tillage will be partially to level the ground and destroy any weeds that may have begun to vegetate. The depth of covering over the potatoes will be materially reduced by this operation, and the soil well pulverized, both of which will contribute to accelerate the growth of the plants. By levelling the drills it is also considered that the stems come better up in a direct line, the deep covering of earth immediately over them having a tendency to make them come through the sides of the drills. But when the drills have been previously rolled no such effect can be produced. S.

ACCOUNT OF EXPERIMENTS MADE WITH SOME OF THE RARER GRASSES AS A SUBSTITUTE FOR TARES, OR THE FAILURE OF AFTER-MATH.

BY MR. THOMAS BISHOP, LAND-STEWARD, METHVEN CASTLE.

(From the Quarterly Journal of Agriculture.)

The *Poa nervosa*, or Hudson Bay meadow-grass, of which I claim the merit of introducing into the agriculture of Scotland, was first received by me from Mr. Stuart Murray, Curator of the Botanic Garden, Glasgow, about eight or nine years ago, amongst some other grasses recently received from North America. Perceiving it to retain a freshness during the severity of winter,—to rise earlier in the spring,—and on being cut over, to reproduce leaves and flower-stems with a rapidity far exceeding the many other species which I had in keeping, induced me to extend its cultivation by itself, and in mixture with other pasture grasses. I have sold and given away seeds of it to several individuals, who have found it to possess all the requisites of an excellent pasture grass.* The *Poa nemoralis angustifolia* is the nearest allied to it of any of the British grasses, but from which it differs widely in the general habit of growth and succulency of stem and leaves.

Mr. Murray has now no recollection of having had a grass under the name of *Poa nervosa*, and suspects that the name had been attached to my plant inadvertently by some of his young men.

The name does not appear in any botanical work that I have had access to, save in Sinclair's *Hortus Gramineus Woburnensis*, where it is twice cursorily mentioned, first at page 12, in illustrating the variety of grass stems, and at page 17, for that of the flower or seed. But whether the plant which I now take the freedom to bring under the Society's consideration is the same or not, I must leave to botanists of higher research to determine.

The importance of securing for bestial a full supply of green food, of rich and nutritious quality, during the summer and autumn months, is so evident to all who have observed the inconvenience and expense to which farmers in general are now almost yearly subjected, by the failure of their second crops of clover, that it requires little illustration. Many are induced to grow tares as a substitute, notwithstanding that they are considered a scourging crop, and little calculated to sustain the health and strength of working animals under any degree of hard labour.

The success of an experiment (to obviate the necessity of growing tares, and to meet the deficiency of after-grass), made by me last year on Mr. Smythe's home farm, at Methven Castle, and again repeated this season, warrants me to make it more extensively known. This consists of a combination of grass seeds that will perfect their culms or flower-stems the same season in which they are sown, when not impeded by a grain crop, with two or three kinds of clovers suited, as early

* See Report by Mr. Black of experiments on natural grasses, at Dalkeith park, published in the Quarterly Journal of Agriculture, No. 40; also a description of its peculiarities in the Perthshire Courier of 21st April, 1836.

or late food is required, and so varied by proportioning the several seeds, or sowing them at different times, as to serve more than all the purposes to which tares can be applied, without interfering with succeeding crops; or they may be made the basis of permanent pasture, by adding the seeds of the more enduring natural grasses. A short detail of the experiments and results, will best serve to illustrate the value and advantages of the system.

In spring 1837, a field of heavy red loam, which had been under a crop of potatoes and turnips the preceding season, was ready to be sown out with barley and grass seeds. From this about $2\frac{1}{2}$ imperial acres were set apart for the experiment, into which no grain was sown. Before the ground could be brought to a proper tilth, a tract of rainy weather set in which delayed the sowing until the 4th of May. When still in a damp state the ground was sown with 4 bushels of Italian rye-grass, *Lolium Italicum*; 8lb. broad-leaved Timothy grass, *Phleum pratense*; $4\frac{1}{2}$ pecks of Fescue grasses, including $2\frac{1}{2}$ pecks of meadow fescue, *Festuca pratensis*; 20lbs. of crimson clover seed, *Trifolium incarnatum*; 8lb. red clover, *Trifolium pratense*; and 12lbs. white clover, *Trifolium repens*, to secure permanent pasturage. All the seeds vegetated rather slowly, on account of the dry cold weather that followed, but on the return of moist weather, they grew with astonishing rapidity, so as to be in condition for mowing as food for horses on the 15th August, and they continued to yield an abundant supply until the end of October, part having been cut a second time. Many of the Italian rye-grass stalks measured five feet and upwards in length, from which a considerable quantity of ripe seeds were saved from a portion made into hay; the Timothy grass came partially into flower and seeded; and the crimson clover was much earlier than the common red, but both gave good returns. The horses that were fed on the mixture got into better condition than they had been during the previous part of the season, although their work was more severe, being employed at the time in subsoil ploughing moor-ground.

The weight of green produce cut in a dry state on the 26th of September, yielded at the rate of ten tons seven hundred-weight per imperial acre, and in hay two tons three hundred-weight. The greater part of the Italian rye-grass was killed during the winter by the long-continued snow storm, but that which remained, with the Timothy and meadow fescue grasses, gave an excellent crop of hay last summer, and was the first of the season to admit of being mown for the soiling of bestial.

The success of last year's experiment having encouraged a continuance of the system, about the same extent of ground as occupied with it last year, was this season set apart on another field, which had borne a crop of oats the preceding season. After having been broken up from the old grass, and receiving a subsoil ploughing along with the rest of the field, the ground was manured with the same proportion of farm-yard dung as allotted to the remainder for green crops, and sown on the 20th of April with a similar assortment of grass seeds, as formerly enumerated, increasing the red clover to 7lb. per acre, and lessening the crimson to the same weight, and adding to the Timothy 4lb. per acre, with $\frac{1}{2}$ lb. of meadow foxtail grass, *Alopecurus pratensis*, besides to others of the *poa* and *festuca* genera with white

clover, to ensure a permanent sward to assimilate with the rest of the field when sown out of the green crop. The land was properly pulverized and smoothed with the roller, before the grass seeds were sown. These were covered in with a bush harrow (partially worn) and finished with a second rolling. The seeds sprung up vigorously, and have proved a valuable crop; the last of a first cutting having only been taken home on the 17th of October, until which time there had been an abundant supply of the best green food for the work horses, whilst many in the neighbourhood have been necessitated to keep theirs on hay for upwards of two months.

From the uniform springing of the variety of seeds sown, and the exposure of the field, the Italian rye-grass did not, this season, attain the size which it did in many parts of last year's crop, but still its *apparent* value was not reduced, though I had not the opportunity to ascertain the produce per acre by actual weight and measurement.

Several gentlemen around, and from a distance, have inspected these experiments, and seemed highly gratified with the results.

FARINGDON.

Upwards of forty of the most influential agriculturists residing in this neighbourhood, sat down to dinner at the Salutation Inn, in this town, on Tuesday, April 23, to which Mr. Edward Stratton, of Longcot House, was invited for the purpose of presenting to him a very handsome silver tankard, (not a goblet, as stated in our last.) After the cloth had been removed, and the usual loyal toasts given,

C. S. MEDLEY, Esq., who was in the Chair, rose and announced to the company the object for which they had met; he said, he could not speak too highly of the conduct of Mr. Stratton in all his dealings, as a purchaser of corn at this market, and he was happy to find such conduct had been duly appreciated by the supporters of the market, as was manifested by their exertions in raising by subscription the handsome testimonial which he had that day the pleasure of presenting. The worthy Chairman emphatically addressed Mr. Stratton in very eloquent terms, and presented to him the tankard, which was elegantly chased and ornamented with appropriate emblems of husbandry, bearing the following inscription:—"Presented to Mr. Edward Stratton, 23d April, 1839, by the Farmers at Faringdon, as a testimonial of their high sense of his probity in all matters of business, and particularly as a large purchaser of corn at that market." The Chairman then proposed the health of Mr. Stratton.

The tankard was soon filled with champagne, and replenished until every person present had had an opportunity of doing justice to the health proposed.

Mr. STRATTON, in a very excellent speech, returned thanks, and concluded by promising to use his utmost endeavours to support the market; and proposed as a toast, "Success to the Faringdon Cattle Market."

Song, "the Ploughshare of England."

The CHAIRMAN next proposed the health of Mr. Joseph Penstone, who had exerted himself in raising the subscription, and made choice of the handsome tankard before him.

Mr. PENSTONE returned thanks, and spoke in the highest terms of Mr. Stratton's conduct as a farmer and supporter of the market.

The CHAIRMAN then proposed the healths of Mr. Thomas Gillett, of Brize Norton; Mr. Williams, of Buckland; Mr. John Harris, of Hinton; Mr. John Brooks, of Cold Harbour; and other gentlemen present, who severally returned thanks.

Many excellent songs and glees were sung during the evening, and the whole passed off with the greatest hilarity.

ON THE COMPARATIVE VALUE OF THE TURNIP AND POTATO CROPS.

Swedish turnips should be sown on or before the middle of next month; the different kinds of the Aberdeen and Dale's Hybrid, about the latter end of it, or early in June. The Globe, Norfolk, and Tankard turnips may be sown from the middle of June till the middle of July, but there is better chance of success when they are sown from the middle till the latter end of June.

Some farmers complain of the succeeding crop being less productive after turnips than after potatoes; for our own part, we never saw any just ground of complaint where the culture and management of the turnip crop was judiciously performed; and we consider the potato crop to be comparatively exhausting, and less profitable than turnips. This we shall endeavour to show. The same labour and manure is necessary for potatoes with this exception, that the farmer has the advantage of preparing his ground for turnips at a comparatively slack season, and every opportunity afforded for thoroughly eradicating weeds, which advantage, (and it is by no means a trifling one), is not allowable at the early period when potatoes are put into the ground. The potato crop is chiefly transferred to the market, and consequently returns a very inadequate quantity of manure to the soil; whereas the turnip crop, with rare exceptions, is consumed upon the farm where it is produced, and by the large quantity of valuable manure accumulated by their consumption, turnip is the most enriching crop under cultivation we know of.

TO SEED AN IRISH ACRE WITH TURNIPS.

The produce of an Irish acre of turnips may be reckoned at 40 tons, which will maintain (at least) four horned cattle for 5 months. Each of these will make 1*l*. per month in value during that time, amounting to.....

£20 0 0

And the quantity of manure made during that time will be worth....

16 0 0

£36 0 0

Deduct price of seed....

4 0

£35 16 0

On the other hand, an acre of potatoes may be calculated to produce upon a fair average about 400 bushels, which at 1*s*. per bushel, amount to.....

£20 0 0

Deduct price of seed....

1 15 0

£18 5 0

Leaving a balance in favour of turnips of £17 11 0 And the loss of labour, and expense of transferring the potato crop to market, far more than counterbalances the expense of attendance of cattle, &c.

We are aware that many farmers derive a larger produce of potatoes per acre than we have mentioned, but this is only the exception, not the general or average produce.

No crop, which can be raised at so cheap a rate will maintain such a number of animals per acre the consumption of which will return such a large

quantity of valuable manure to the soil, nor enable the farmer to increase the fertility of his farm equal to the turnip; and we are happy to see that their culture is yearly extending, and we hope ere long to see the whole farmers in the kingdom thoroughly alive to its advantages. C.

April 30.

GROWTH OF SWEDISH TURNIPS.

The various practices pursued in the cultivation of this root, the different results of the practices, and the very useful nature of the bulb when well grown, make them at all times an interesting subject of enquiry; that they should be large is one object of the farmer, for they are as sound when large, and luxuriantly grown, as when small and stunted; on this head, therefore, they are far more preferable than the white or other common Turnip, and cannot be manured too highly; indeed the farmer who wants a crop of Swedish Turnips ought not to spare the expense of a few pounds per acre in artificial dressing to insure a crop; it is not like a dressing to a corn-crop, where the straw may be driven too luxuriant to bear grain; in this root you cannot very easily overdo it. The account lately given of an excellent produce of this bulb at Frensham, near Farnham, calls forth this statement of a still more productive crop, on the opposite side of the far-famed hop-growing market town, viz., at the Tithing of Badshot: the land it is true, is of a far superior nature to the one described at Frensham, for it is a good mixture of the three common earths, on a subsoil of chalk, and has been a cultivated soil for ages, therefore must have a large proportion of the residuum of various manures in its texture, this residuum is now termed "humus," or *fabulum* for any vegetation. This land has been experimented upon by the very spirited Proprietor, by having had ten acres dressed in different ways; by common turf ashes, by soot, by hair, and by a mixed carbonaceous animal matter, the produce was good over the whole; the only deficiency discernible was in the part where the ashes were used; of course, here was no oleaginous animal or vegetable decay, the carbon had been driven off by fire, in the shape of smoke, and what remained was the alkali, (potash) as the only direct vegetable food. The propriety of having the ashes as fresh as possible, before they have been washed by rains, must be evident to every one who has seen the alkali washed out of wood ashes to soften water, and in this light it is now viewed by this experienced agricultural gentleman, who expends every year not less than one hundred pounds in extraneous manures.

The mode adopted on this farm for putting in the seed, and after-management, may be briefly stated:—The land is brought to a fine state of tillage, manured all over, ploughed with a very broad seam, a hand seed-machine run up each furrow, making fourteen rows in each rod wide; the hoeings, in their proper seasons, are made three times, and ultimately the bulbs are left at 16 inches distance, 12 in the rod, per rod, thus giving 168 bulbs to the square rod; an average bulb was drawn a few weeks ago, and weighed 4 lbs., and the crop computed all over the field to yield at least 150 turnips to the square rod; this would give 600 lbs. to the rod, 60 lbs. to the bushel would be 10 bushels per rod, and over an acre would make 42 tons 17 cwt. On this excellent growth of turnips there are now 600 sheep fattening, and now nearly finished: so good are the sheep, that a neighbour was induced to purchase them on speculation, and take the chances of the London and other markets, and it is hoped he will do well by the purchase. L.

TO THE WOOL GROWERS AND GRAZERS OF THE COUNTY OF ESSEX.

Coggeshall, May 1.

GENTLEMEN,—As we are now upon the eve of another clipping season, I am desirous (through the medium of this journal) of inviting your notice to a few remarks relative to the washing of sheep. It is a subject which I consider has not generally received the attention the importance of it demands. I think it is not sufficiently impressed upon the minds of the wool growers, how much the value of wool is affected by the mode in which these operations are conducted. With a view, therefore, of directing your attention to the subject, rather than with any idea of suggesting what is new upon it, I beg to offer the following remarks. The most suitable time should be selected; if the shearing takes place too early, the staple of the wool is deprived of that length and elasticity so essential to combing purposes; if too late, the animals themselves often suffer, and the wool loses both in weight and quality. Of course the precise time must in some measure be regulated by the season and condition of the sheep, but as a general rule I think there is no period found to be more advantageous for this county than the first and second weeks in June for the Downs and cross breeds; and the middle and latter end of June for the pure-bred Kents and Leicester breeds. I would next observe, that softness, brightness of colour, and cleanliness of the wool, are most indispensable requisites to the manufacturer, and it is the obvious interest of the wool grower to endeavour to secure these points. In order to this, I would recommend particular attention being given to the following points:—securing a plentiful supply of clean water at the time of washing, and using it freely, particularly about the under parts of the sheep. Feeding the sheep on pastures or well covered clover layers, and not permitting them to be driven on dusty roads till they are shorn. Never allowing more than seven or ten days to elapse between washing and shearing, unless under unavoidable circumstances. It is erroneously considered by some, that extending the time from fourteen to twenty-one days, imparts to the wool an additional degree of softness that is valuable to the manufacturer. Whatever softness is thus obtained, results merely from an accumulation of animal grease outside the fibre of the wool, and is entirely lost in the process of manufacturing. The richness and softness that is of any real value to the manufacturer can only be acquired by attention to the breeding and feeding, and taking care that the animal is in a proper state at shearing time. If the weather be cold, herding the sheep closely together in a barn or shed, the night before they are shorn, will force the fluids of the animal into full and vigorous circulation, promote perspiration, and assist to produce the softness required. Another most important particular is, to see that the place set apart for shearing is cleared of all kinds of rubbish, such as straws, short grass, chaff, or any other substance the wool may be liable to gather up; as all these substances, even the most minute of them, have to be picked from the fleece before it can be used, this is attended with considerable expense and trouble. No cloggings, lumps of dirt, or underlocks should be suffered to be rolled up with the fleece, as such a practice is unfair to the purchaser, and by act of parliament there is a

heavy penalty attached to those who are convicted of doing it. I am inclined to think the practice of enclosing clogs and underlocks inside the fleece prevails to a much greater extent than the growers have any idea of; I believe it is practised by the shearers without their knowledge or sanction. The fleeces should be wound as closely and securely as possible, and the band drawn from the middle or back part of it. I have now, I believe, gone through all the stages connected with the process of washing and shearing, and perhaps many when they peruse it, will smile at the idea of my taking so much trouble to inform them what they so well knew before. But, as I stated at the outset, I did not presume to furnish you with any novelty,—my object will be gained, if by the above hints I succeed in rousing your attention more fully to the subject, and induce you to infuse into this department of your avocations the same spirit of inquiry and improvement, which at the present time so generally pervades all other branches of agricultural and grazing operations. I am fully persuaded it would highly conduce to the interests of the wool-growers, as well as the wool-staplers and manufacturers. Wishing you a fair price and a ready market for your coming clip,

I remain, gentlemen,

Your most obedient servant,

STEPHEN UNWIN, JUN.

LABOURERS' FRIEND SOCIETY.—It affords us much pleasure to be enabled to inform our readers that a society has been just formed, under the title of "The Stockbridge Labourers' Friends' Association," the object of which is to promote and reward good conduct, and to encourage industrious habits among farm-servants, cottagers, and labourers. Mr. Baring Wall has been elected president, Sir John Barker Mill vice-president, Mr. Elwes treasurer, and the Rev. Walter Blunt secretary of the Association; and it is intended, should the state of the funds permit, of which, it is to be hoped, no doubt need be entertained, to offer premiums to the ploughmen who shall plough a certain quantity of land in the best manner; to the shepherds who shall rear the greatest number of lambs with the least loss of ewes; to the carters who shall have lived longest in service with one master, or on one farm, and shall produce testimonials that they have never returned home intoxicated when sent out with their teams; to labouring servants of all descriptions, male or female, who shall have worked the longest time on one farm, without receiving parochial relief; to farm-servants who shall have deposited a part of their current year's wages in any savings' bank; to cottagers who shall exhibit the best samples of potatoes, onions, or other vegetable produce; to cottagers who shall produce the greatest weight of honey from the smallest number of hives, &c.

EMPLOYMENT OF MINERAL TAR OR PYROLIGNEOUS LIQUOR, FOR THE PROTECTION OF WALLS OF MASONRY OR OF MUD.—When the walls are thoroughly dry, towards the end of summer (having previously been either newly built or put into a state of thorough repair), they are to be coated over, once, twice, or thrice, with the tar. The last coat, immediately when put on, may be powdered with sand; and this, when solidified, may be white-washed. In France, earthen walls, and the walls of courtyards and terraces, are treated in this manner, and so rendered of great durability. (*Annales des Ponts et Chaussées*, as quoted in the *Frank. Jour.*, vol. xxii. p. 284.—*Gardeners' Magazine*.)

THE PROPERTIES AND USE OF SOIL AND SUBSOIL.

Although it has been shewn that there is an intimate connection between the nature and properties of the soil and those of the subsoil upon which it rests; yet we would wish it to be understood that the nature and quality of the materials of which the soil is composed, has not so much to do with its productiveness, as the mere mechanical mixture of its parts, by which it is brought into such a state of friability as to enable it to retain moisture in dry seasons, and give off by filtration its redundant moisture during a continuance of wet weather. When soils are not naturally in such a state of friability, they might be made so artificially by a proper admixture of clay, if too light or sandy; and by an admixture of sandy matter, when too strong and adhesive.

47. SILICIOUS SANDY SOILS soon decompose the manure bestowed upon them, which is carried off by water and evaporation.

These are called hungry soils.

Soils on a dry porous subsoil are more easily dried by evaporation than when the subsoil is clay or marl.

A dry, light, sandy soil on a clay subsoil, is more productive than on a sandy, gravelly subsoil, and it also supplies the means of its permanent improvement by mixing some of the subsoil with the soil.

48.—“The best constituted soil is that in which the earthy materials, the moisture, and manure are properly associated, and on which the decomposable vegetable or animal matter does not exceed one-fourth of the weight of the earthy constituents.”

Putrefaction goes on very slowly in strong adhesive clays, while in sand and gravel the process is very rapid. In quick lime, it is more so than in sand, but carbonate of lime or effete lime retards the process of putrefaction more than sand or clay. All earths have an affinity for, or the power of, retaining the gas or effluvia from the fermentation of animal and vegetable matter which takes place on or near their surface.

None of the primitive earths, when pure or unmixed with others, are capable of supporting vegetable life; they are neither convertible into the elements of plants nor into any new substance by any process naturally taking place in the soil. When they are component parts of the soil, they merely act as mechanical agents for the support of the plant, and prepare a bed in which the roots sink and extend themselves for the purpose of fixing their position, thus forming a natural laboratory in which the decomposition of organic matter is carried on, and where it is reduced to its original elements for the reproducing of plants.

A soil that is formed of nearly equal parts of the three primitive earths, namely, sand, clay, and lime, with a mixture of decomposing vegetable and animal matter, imbibes moisture from, and gives it out to, the atmosphere, and has all the principles of fertility which give life and vigour to the plants that grow in it.

The properties of a good soil should be so friable and porous as to permit the roots of plants to strike freely in every direction in search of nourishment, and to allow the superfluous water readily to pass off through the subsoil, but to be sufficiently tenacious to retain moisture for the support of plants when in full vigour.

Fertile soils must be composed of silicious sand, clay, and calcareous matter. “The proportion,” Kirwan says, “where rain to the depth of twenty-

six inches falls per annum, is fifty-six per cent. of sand, fourteen of clay, and thirty of calcareous matter.” But these proportions depend entirely on the climate, the situation, the nature of the subsoil, and other local circumstances. More silicious sand is required in proportion as these circumstances tend to make the soil wet; and more clay, if they tend to make it dry.

The constituent parts of a fertile soil should bear a certain relative proportion to each other: but if any of these prevail or fall short to a certain degree, the soil becomes less productive.

The proper proportion of the primitive earths to form a productive soil under these circumstances may vary from 50 to 70 per cent., of silicious matter; from 20 to 40 of clay or aluminous matters and from 10 to 20 of calcareous matter.

According as the climate is moist, the soil should be friable and porous; according as it is dry, the soil should be adhesive and retentive.

The most productive soil is that which is so constituted as to maintain such a degree of moisture in very dry, and in very wet seasons, only to give a healthy supply of it to the plants. Such a soil gives to plants the means of fixing their roots deep to support them during the period of their growth, and allows them to ramify in every direction in search of nourishment where they may easily abstract the elements of vegetable life without being injured by a redundant or a deficient supply of moisture, during any period of their growth. A constant supply of air and water is necessary to make and keep the soil permanently productive; when the soil is easily made and kept friable, it will also have the power of absorbing, retaining, and decomposing the water, the air, and the organic matter, which may be in its composition, by insensible fermentation; and give up a constant supply of the results of this decomposition for the growth of plants, either at seed time, when they are merely vegetating,—in summer, when they are growing with the greatest luxuriance,—or in autumn when they are ripening their seed for harvest.

THE PRODUCTIVE POWERS OF NATURE.

The powers of nature to create vegetable productions appear never to diminish; the process goes on year after year with increasing energy, and brings forth an increase of vegetable matter to be again decomposed and returned to the soil. This is the natural process by which the decomposing vegetable matter which we find in the soil is formed; and there has been a continual succession of production, decay, and reproduction, of vegetable matter going on ever since nature first sprung into existence, producing vegetables which, when dead, are decomposed into the elements of which they were originally formed.

No loss is sustained by the decomposition of vegetable or animal matter in the soil; all is reduced to the first elements of plants which give fresh energy to vegetation by again entering into vegetable composition.

Thus the process of the growth and decay of vegetable matter goes on in a continual succession, and the decay of one crop becomes the nourishment of the next.

When nature is left to herself, the accumulation of decomposing vegetable matter on the surface becomes great; and if the soil is not possessed of the property of hastening their decay, the vegetable

matter is merely increased on the soil, without adding to its productive powers.

On a careful examination, we think, it will be found that the production of vegetables never exhausts any soil; the yearly growth of grass with its decay, adds yearly to its productiveness, and even a plentiful crop of weeds, when allowed to decay on the land which produced them, has the same effect; and thus it is, that land, which has been worn out by cross cropping, is by slovenly farmers left for nature to improve.

When the natural pasture is consumed by stock it is converted into animal food for man: and the excrement of the stock being left on the soil forms a rich decomposing animal manure, which gives to the soil increased energy to reproduce an increase of vegetable food for an additional quantity of stock.

Pasture land is full of vegetable fibre, from the surface down as low as the roots of plants descend. Some are the recent roots of grasses, others are those of every stage of decomposition. In arable land scarcely any vegetable fibre is to be found: this circumstance should teach us, that to form a good pasture, we should fill the soil with vegetable fibre as a manure, where we convert arable into pasture land.

The very small proportion of vegetable matter which is contained in the most productive arable soils, would almost seem to indicate that their richness does not depend on the decomposing vegetable matter, but on something else; for if all the straw or refuse of the crops it produced, was returned to it after it had passed through the stomach of some animal, this would scarcely be equal to one-third of what the earth produced.

A judicious succession of crops, and a profitable consumption of the produce by sheep on the ground, return to the soil such a quantity of manure as to give an additional means of increasing its productiveness.

"Water is necessary to the growth of plants. It is essential to the juices or extract of vegetable matter which they contain, and unless the soil, by means of commutation, be fitted to retain the quantity of water requisite to produce those juices, the addition of manure will be useless. Manure is ineffectual towards vegetation, until it becomes soluble in water; and it would even remain useless in a state of solution if it so absorbed the water as entirely to exclude the air: for in that case the fibres or mouths of the plants would be unable to perform their functions, and they would soon drop off by decay." 179, Steward.

It is necessary that the animal and vegetable matter in the soil should have this decomposing disposition, and the soil have it in proportion to the proper admixture of the materials of which it is composed.

A certain degree of heat, the influence of the atmosphere and water, are necessary to carry on the decomposition of animal and vegetable matter in the soil. The best constituted soil therefore has the power of imbibing, retaining, and giving up to plants a proper degree of heat, air, and moisture. When the atmosphere is warm, moist, and sultry, vegetable life is in the greatest vigour, which would indicate these to be necessary to vegetable life if not the very principles on which it depends.

Soil should not only have an affinity for the moisture of the atmosphere, but it should also have the property of readily transmitting it to the vegetables which grow in it.

The soil, therefore, which is best adapted for retaining and transmitting in all circumstances of wet

and dry weather, the necessary quantity of moisture to growing plants, may be reckoned the best and most productive.

If we impart to any soil that which induces vegetation, we improve it and increase its productiveness; but if we in any way withdraw from it that which tends to produce vegetation, we injure it and may make it sterile. Barrenness in soil is produced when the component parts of it are so firmly united, that air, water, and the influence of the sun cannot enter into combination with it. When a soil is pure clay, it is sterile and worthless, and so is that which is pure sand. The former resists effectually the enriching influence of the rains and dews, which merely fall on its surface, and either run off or lie there, without penetrating into it. The sun and wind also may beat on it and blow over it, but they can never penetrate its mass to awaken up the dormant energy that lies within; they only have the effect by their repeated attacks to dry and harden the surface, crack it into irregular portions, and more firmly to lock up any languid and dormant principles of vegetable life that may be within the mass. The latter is so porous and loose in its texture that the rain and dews no sooner fall on it, than they pass through it rapidly like water through a sieve; the rays of the sun and the wind evaporate and dry up the last particles that remain, producing only a transitory effect on vegetation, and because they have no regular supply of moisture, the plants soon wither and decay.

The energies of the soil are frequently held in bondage by some pernicious quality inherent in it, or imparted to it, which if neutralized or extracted the soil would become productive.

When light, sandy, and vegetable soils are artificially made lighter, they possess little of the principles of vegetation. The mechanical disposition of a clayey soil is also deranged by improper treatment, such as trampling or ploughing it in wet weather; and although the soil has a full supply of animal and vegetable manure in it, yet the mechanical derangement so totally locks up all its energies, that the fermentation so necessary is altogether stopped, and complete barrenness is the result.

This we have frequently observed to occur from land being trampled by sheep in eating off turnips from strong clay soil during wet weather, in the early part of the spring.

They convert the surface into a complete puddle, and when it becomes dry, the parts composing the soil are so closely united together, that it is like bricks dried for the kiln, and is entirely unfit for the production of plants. It is evident that the causes of sterility in these soils are opposed to each other; each therefore will require a mode of treatment peculiar to its case. The light, sandy, and vegetable soils, that are too friable, must be artificially rendered more firm; and the too tenacious clay soils must be made artificially friable and kept so, and be pulverized and mechanically altered before we can expect them to become productive. It is evident if these two soils could be mixed together, the mixture, with a proper quantity of vegetable and animal manure, would make a good productive soil.—*Morton on Soils.*

BEE SWARMING, with bees, in most cases, is an act of necessity, and may commonly be prevented by timely enlargement, and decreasing the temperature of the hive. As soon as warm weather sets in, a common hive becomes filled with an augmented population. Every part is crowded to excess: no storing room is left, the heat becomes insupportable, and at length the emigration of a part of the inhabitants must take place.

On the occasion of a first swarm, the old queen leads it forth, usually leaving her successor to the throne still in embryo. About an equal proportion of old and young bees, and (though not without exceptions) several hundreds of drones form the swarm. It is not an unusual thing to hear a boast of a number of swarms or casts (as the second swarms are called) from a stock of bees, which will even sometimes throw off a swarm the first year. Nothing is proved by this, but the fact, that an otherwise thriving colony has been weakened (if not destroyed) by being split up into fractions, which ought to have been held together as the greatest security against every evil, and the surest source of profit to the proprietor. In the words of Gelien*—"In the swarming season the strong hives are almost entirely filled with brood combs. At that time also honey becomes abundant, and when fine days succeed each other, the working bees amass an astonishing quantity. But where is it to be stored? Must they wait till the young bees have left the brood-cells, by which time the early flowers will be withered? What is to be done in this dilemma? Mark the resources of the industrious bees, they search in the neighbourhood for a place where they may deposit their honey until the young shall have left the combs in which they were hatched. If they fail in this object they crouch together in the front of their habitation, forming prodigious clusters. It is not uncommon to see them building combs on the outside." In general honey-gathering is altogether suspended necessarily under the circumstances just stated, and swarming follows. Can anything be more opposed to the habits of these industrious creatures, or more injurious to the interest of the proprietor, than this state of things? Common sense, and observation of the natural instinct of these little animals, point out the remedy, viz.—a temporary increase of space, which is furnished by Nature, when the bees voluntarily take up their abodes in the large hollows of trees, or under the spacious and well-ventilated roofs of buildings.

—Taylor's Bee-Keeper's Manual.

LONDON LACTARIES.

To those unacquainted with this vast Metropolis, and the almost incalculable amount of supplies the number of its inhabitants must necessarily require, the article of milk must appear not the least striking.

The writer of this little notice—an invalid, spending an interval in the vicinity—is enabled to give the following description of Laycock's Dairy at Islington.

The lactary covers a space of sixteen acres, including the layers, grain-pits, rick-yards, &c., &c. It contains nine cow-houses, each about one hundred and forty feet in length, by twenty-four feet broad, either of these contains sixty-four cows, thirty two on a side. There are also fattening-pens, and an Infirmary for such of them as may happen to require temporary separation; these instances, however, considering the great number kept, and the artificial mode of treatment, are but rare, the writer being assured by the resident veterinary surgeon, Mr. Stavley, to whose politeness the former is indebted for his information, that nearly the *only* inconvenience felt is, that arising from lameness. The animals, all of the finest description, are constantly kept in their houses both day and night, in the summer season only being turned out for a few hours daily into the layers. Cows are rarely kept here longer than twelve months, during which period they are regularly milked, and what may appear extraordinary to those ignorant of the management, the process of fattening goes on with the milking; so that by the time they become what is termed "dry," most of them are fit for Smithfield, and but few of the number (six hundred constantly kept) require "stalling" after the period of milking is at an end.

The writer has viewed several in an extraordinarily high state of condition, (almost fit for a Christmas show)

* See his Book, "The Bee Preserver," translated from the French. This valuable little work contains the substance of sixty-four years' experience.

at the time the Cambrian and Hibernian women were sitting upon their stools, each exercising with inconceivable volubility her vernacular tongue, and "filling her milking pail."

This number affords twelve hundred gallons of milk per diem, upon the average; it is taken away at an early hour of the morning and afternoon by the venders, who purchase here to retail in the Metropolis.

The average worth of each cow is about 18*l.*; which, assuming the number kept always to average six hundred (the minimum rather than otherwise) gives a capital of 10,800*l.* always afloat to stock this stupendous dairy with cows only.

Their feed consists of grains, mangel wurzel, the Swedish turnip (the latter for fattening), and hay; at the rate of

1 bushel of grains,
56 lbs. of mangel wurzel, or turnip,
12 lbs. of hay,

to each; or

600 bushels of grains,
15 tons of wurzel and turnip,
3 6-28 tons of hay,

per day, to the total number.

The quantity of butter made here is, for an obvious reason small; and rarely exceeds 100 lbs. per week.

The number of pigs kept here is about 400; some bred, others bought in, but all fattened here.

Forty horses are always required, and constantly employed upon the dairy.

The layers are capable of receiving 1,600 head of fat cattle, exclusive of sheep; and the average number for Smithfield market, resting here weekly, is 800; the charge of layerage being 3*d.* per head, and fodder at the rate of 3*s.* per 56 lbs. or truss.

Such is *one* of the London Lactaries—there are many of them, some of larger, several of equal, and a few of inferior extent.

From this brief description of one, however, some idea may be formed of the consumption of this nutritious article of our food, but which, nevertheless, forms so inconsiderable a portion of it, called milk. J. R.

4, College Terrace, Islington, April 22.

TROTTSWORTH MANURE.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—In a paper I published some time since, and by advertisement in several papers, I proposed to make public, early this spring, in a pamphlet, a detailed account of making the above manure, if I should obtain subscribers sufficient to make a fair remuneration for the expence and trouble I had incurred, and the immense saving it would be to all landowners and occupiers. To this course I was advised by several influential persons, and by their advice I also take an early opportunity to inform those noblemen, gentlemen, and others, who have honoured me with their names as subscribers (and to whom I return my sincere thanks for their confidence) that the subscription is not likely at present to arrive at a sufficient number of subscribers to accomplish that purpose; and therefore I am advised to defer the publication of the pamphlet to some future opportunity. In the mean time a number more trials will be made of the manure, both in liquid and powder, by gentlemen to whom I have, and shall supply with it, for turnips, &c., and my more immediate neighbours will also avail themselves of a considerable quantity, having previously satisfied of its good effects; these trials will be more satisfactory than all I can say on the subject, and it will then rest with the public if they think it desirable to add their names to the present list of subscribers; from my own experience I should judge that it cannot be long before the value of this manure will be properly appreciated, and that the time will yet arrive when the farmer, by making this preparation on his land, will save 50 per cent., as compared with any artificial manure at present in use.—I am, Sir, your obedient servant,

GEO. KIMBERLEY.

Egham, Surrey, April 28.

ON THE UNPROFITABLENESS OF OLD PASTURE COMPARED WITH NEW.

BY JOHN BOSWELL, ESQ., OF KINGCAUSIE, ABERDEENSHIRE.

(From the Quarterly Journal of Agriculture.)

I have long held the opinion, that "permanent pasture," instead of being a good thing, is an erroneous thing—I had almost said, an absurd thing—into which the agriculturists of this country have fallen; and it has only been the idea, that, in this age, when the science of agriculture is making such rapid strides, when men of the highest caliber of intellect are putting forth their talents in removing darkness and error from the art,—some one would step forward and expose the fallacy of *permanent pasture* being such a grand and desirable object, that has deterred me from expressing my sentiments on the subject. No one having taken it up, I am constrained to do so. I shall, however, only endeavour to break the ice, and leave it to more able pens than mine, to bring the matter as fully as it deserves to be before the public. As I am about to advance a doctrine quite hostile to the received opinions of many sages in agriculture, I think it right at once to state, that I conceive *pasture* to be of vital importance to agriculture, and the production of it in perfection, a sure sign that a man is at the top of the tree in his business as an agriculturist; and I may also state, lest I should be accused of too hastily taking up a theory which I have not studied, that although agriculture, in all its branches, has been my pursuit for many years, the production of good grass was the first thing which induced me to enter on it, and was for a long period the philosopher's stone I sought most eagerly to find out. Struck, when a boy, with delight at the evergreen meadows of Doncaster, and the freshness, in the dead of winter, of the fields near London, I could not, in settling in the north, help contrasting these—with a feeling almost bordering on disgust—with our whitey-brown *grass parks* of Scotland, wearing in many places a pale blue tint till the beginning of June, or puffed off with great exultation in the newspapers, as affording "a full bite" in the middle of May. I said to myself, "Cannot industry and exertion produce a change on our grass lands? Perhaps we cannot expect to vie with Doncaster or London, but still something may be done." So, doffing the gay soldier's coat, and putting on the hodden grey, I set to work, to try if fine pasture could not be got in Scotland. Long did I toil at top-dressing—all the never-failing oft-recommended recipes of this compound and that compound, I tried in vain—peat-earth, in all the varied shapes of mixture with lime and dung; soot; composts with scrapings of ditches "or other matter"—all these I tried in various ways. I exhausted the pharmacopœia of agricultural quacks; but soon found out that without the aid of plough and harrow nothing could be done—in other words, that the ground must be put in *good heart* before you can have *good grass*.

Well, that being done, I had fine grass; but it grew bad again; it was not *fine permanent pasture*. I had once more recourse to the old system of top-dressing, and of course improved the pasture, but again it fell off.

By this time I had before my eyes the palpable

fact, that new laid-down grass was good, and that, do what I would, old grass could not be made to bring the same rent. My love for permanent pasture was now shaken—I began to be awake to the folly of wasting time and money in top-dressing, when a good and profitable corn-crop would cause the same land to carry fine grass, and bring a much greater rent. I now ventured to hint to some of my friends, that breaking up the ground appeared to me a much more easy way of producing good grass, than all the composts that could be put on. Few would even listen to me, and I was brought up with an exclamation, "Oh, I assure you, there is nothing like fine old grass, it is so close in the bottom, it has so much more nourishment in it," and such-like oft-repeated and firmly-believed humbug. This opposition has led me deeply to consider the matter, and to look out for facts, some of which I shall adduce.

It appears to me, that it is only on certain soils and situations, that pasture can be allowed to remain without great loss; that such situations are flat meadows, or the neighbourhood of rivers or streams, rich in alluvial soil, and the natural habitat of the pasture-plants, or in the vicinity of large towns, where manure has been applied till the ground could not bring a grain-crop to maturity; and that on all other situations, recourse must be had to the plough, so soon as a failure in the grass-crop takes place; and the breaking up will entirely depend on the quality of the land and manner in which it has been treated, there being no such true *unerring* guide to the *quality* of land, as the length of time it can profitably be left in pasture. If permanent pasture be the object, I would earnestly recommend to all and sundry the careful perusal of, and strict adherence to, the rules laid down in Mr. Smith of Deanston's admirable paper on frequent draining and subsoil ploughing, in the pamphlet published by Messrs. Drummond, nurserymen at Stirling, being firmly convinced, that implicitly following his advice will be the first step towards making land capable of remaining any length of time in good pasture; for it is altogether impossible, that, without draining and deep ploughing, good grass can be produced. Little need be said on the unprofitableness of old pasture to the actual farmer. There is little old grass to be found on the farm of a man who has rent to pay; but to the amateur, who may not be quite so much alive to the loss he sustains, I would ask, have you never remarked the difference of rent that is given by a grazier or butcher, for a field of new and a field of old grass? Have you ever put the question to yourself, Why is this? I shall give you the answer: Let both fields be shut up and cut for hay, weigh the produce, see the great difference in favour of the new grass, and the secret is out. Still keep the cattle from the fields; look at the new grass, how soon the aftermath springs! Well, then, is not the overplus of the hay that which would have fed so many more cattle? and yet people prate about old grass. But some will say, That is very well for profit, but we want beauty; you have no close bottom in your new grass. I answer, put the ground under a good rotation, drain it well, plough it deep, and when you have it ready, apply to Mr. Lawson, the well-known and enterprising seedsman to the Highland Society of Scotland; tell him the nature of your soil, and I answer for it, he will send you such "a mixture" as will produce you a green carpet the very first year that no Genoa velvet could surpass.

I would here digress a little, to say a little to those who may, for the first time, wish to sow the native grasses. Do not send to London for them. I have tried both, and found them quite as good, and many per cents. cheaper, when furnished by Mr. Lawson; besides—some of the first men in England appear to be utterly ignorant of what they ought to send. On one occasion, some years ago, I desired a seedsman of first-rate celebrity in London, to send me such and such seeds, in what quantity *he* thought would be sufficient to sow ten acres. To my astonishment I received an invoice of seed enough to sow the whole parish!

But to return. Not only is the produce of an acre of new grass far greater than that of an acre of old, but it is more palatable to the cattle, and, as far as I have been able to observe, exactly in the ratio of the age of the grass. An example of this came lately under my eye: A tradesman occupied a field, which he cultivated regularly—breaking up a bit, green-cropping it the following year, and then sowing it down, after which he pastured it by tethering his beasts. The man leaving the place, I caused some hurdles to be put round the bit not in grass, and let the rest of the field in pasture. The cattle, during the whole of summer, ate the new grass to the very earth, and did not taste the older, until the force of hunger made them do so. Next season, the bit which had been hurdled off was sown out, and allowed to go with the rest of the field. The very same thing took place—the new grass was first eaten, and then that which was older. I had an opportunity last summer of observing the marked preference which sheep give to younger grass, compared with old, by putting cattle into two fields, separated by a fence only,—one very fine grass of some years' standing, the other only three years old, and, pulling out some of the lower rails of a communicating gate, permitted forty sheep to pass through, and pasture in whichever field they pleased. The result was, they were constantly to be found in the field of younger grass, and very seldom went into the old grass enclosure. At last I was forced to shut them into the old grass, finding they were reducing the feed in the one, and leaving too much in the other. Be it always remembered, that land must be well laid down. If grass, however new, be growing on poor land, or wet, or on land that has been badly cleaned, cattle do not relish it. I have seen frequent instances of this. More particularly do they dislike pasturing on foul land.

I have several times allowed small farmers—or crofters, as they are called—to put the whole of their last year's manure on the bit of ground that ought to have been made into green crop—had they not been quitting their possessions—under the promise that they would give it one or two extra ploughings and harrowings, and sow it down with grass-seeds. This bit of ground, although well dunged, and sown with good grass-seeds, having only got a sham of a cleaning, was of course full of knot-grass, couch, and other weeds. I have observed that cattle constantly shun it, although almost pinched with hunger.

I have now endeavoured to prove that new grass is not only of greater value, but that it is also more palatable to cattle. There is yet another point in which new grass excels old, and that is the early verdure in spring, and the long continuance of that verdure in the fall of the year. I was once greatly struck with this on the lawn of a highly valued friend of mine, who farms pretty largely,

and who spares neither trouble nor expense to procure fine grass round his house. This gentleman had applied all sorts of compounds, in large quantities, as top-dressing to his lawn, particularly gypsum, rich earth, &c., and, by means of these, had grass much superior to what is generally to be seen in spring; but it so happened, that having made some alteration on his house the preceding summer, the workmen had destroyed a portion of the grass on one side of the house, and my friend had been forced to dig this part over, and to sow it afresh. He was well acquainted with the value of the natural grasses, and a mixture of them had been used. The consequence was, that early in April, when we were looking at it, there was a little bit of most beautiful grass, far before the rest of the lawn in verdure and earliness. I called the attention of my friend to the verdure of this patch, and to the advantage of renewing the grass on the rest of the lawn by digging it up. He could not help admitting the superior verdure of the part that was dug,—it was, indeed, too evident to deny; but, on my endeavouring to point out to him that he might have all his lawn just as green, if he would break it up, he shook his head, and said that was a serious concern—he did not know about that. With such-like answers, and with proof daily before his eyes, the lawn remains just as it was.

I had frequently heard of some fine old pasture at the seat of a nobleman in the county of —, which had never been seen under the plough, not even by that venerable personage—"the oldest inhabitant of the place." The first week of July last, I went to see this wonderful old pasture. What was my astonishment, to find a large tract of very fine land covered with *white grass*, the green tinge of spring hardly taking any thing from the bleached appearance of the ground. Instead of a green prairie alive with stock, finding at that season of the year ample food, a few deer (which I learned had been brought through the winter at a great expense of hay and turnips, carted in for them), and half a dozen of horses, picking a scanty subsistence, were the whole stock a park of noble extent could keep!

On conversing with the land-steward, he informed me that it was so old, and the grass, in consequence, so long of rising in spring, it was proposed to break it up, in order, as he said, "to renew the grass."

I am fully aware, that in the front of villas, or around the castles of our nobility, it would not answer to have a three-shift course,—"*white, green, white*;" and that the ground, in such situations, must remain in grass, like old plate on the sideboard, the bullion in the one case, and the soil in the other, being locked up as to use, and destined to perform a part in the pageant and circumstance of rank, until some spendthrift heir send them both a whirling round the wheel of utility. But if there is to be grass land in front of the castle or the villa, why should it not be the best? His Lordship would be ashamed to have tarnished plate; why should he have yellow grass? I see no reason why the one may not be in as good a state as the other. I take it for granted, that the man, whoever he may be, who *condemns* his ground to *permanent pasture*, is regardless of money; and that he would willingly bestow any sum on top-dressing, to have that pasture *good*—well, then, dig over the ground, and give one quarter of the manure which would have been employed in top-dressing; send for "*Lawson's lawn mixture*;"

and, in a shorter space of time than the ground would have been ugly and brown under the top-dressing system, the most beautiful verdure will be produced—to say nothing of the employment of several industrious men, who would thereby be enabled to earn an honest livelihood for themselves and their families. Of course, this spade-work I only prescribe, when time is not allowed to put the ground through a regular rotation. I would only apply to the spade, where there is no more time allowed to procure good grass, than the same piece of ground would remain brown if top-dressed.

I have frequently urged different persons to try a part, say a half or a quarter of a lawn—that is, while they were top-dressing the one part, to dig up the other, and to judge for themselves the truth of my assertions. I recollect one instance, where I gave this advice to a gentleman who resides near Edinburgh. I was calling on business; and on gaining admission into his premises, I found, in front of a very pretty villa, a lawn, situated in the best climate in Scotland, and where manure was to be found in any quantity, covered over with lime, through which appeared the nap of a thick blanketing of coarse yellow moss. I could not help asking the gentleman why his lawn was in this state. “Oh,” he replied, “I have been advised to put on the lime to kill the moss, or fog as it is called; for, in truth, there is nothing grows on it but that abominable moss, and yellow dandelion, and I think of putting some earth on the top of the lime, and sowing some grass-seeds.” I volunteered my earnest counsel to try what digging up would produce on a part at least, gave him a recipe as to grass-seeds, and without a fee, made my *congé*, the gentleman promising to follow my advice, which if he did, I felt assured would soon induce him to dig up the remaining part.

Perhaps grass might be produced at once, where the ground is not encumbered with trees, and all other circumstances are favourable, by means of trench-ploughing—I mean by two ploughs following one another: the first would take as thin a slice as possible, which would be thrown into the open furrow; the next plough would follow on exactly the same ground, and bring up some fresh soil to the surface, which would be laid on the top of the first furrow. The ploughing being finished, a little short dung, such as is collected by the police, might be thrown on the surface, and harrowed in along with grass-seeds. In situations at a great distance from dung, bone-dust or pounded rape-cake could be used, to cause the braid of the grass to come away.

Having now broached this subject, I would not, for the present at least, pursue it any further; but ere I take my leave, I would, in the first place, state, in corroboration of what I have been endeavouring to maintain, that by following the breaking-up system instead of the top-dressing one, I have not only altered the verdure, but I have increased the rent of the old grass-lawn on my farm at Balmuto, in Fifeshire, from three to five fold. In conclusion, I would make a brief recapitulation of my sentiments: I maintain, that except a few favoured spots, such as banks of rivers, &c., no ground can, without loss, be left long in pasture; that it appears to me, four or five years is, generally speaking, the longest period land should be allowed to lie in grass; that if pasture be the object, at the end of that time, the ground should be broken up, and returned to grass again. I maintain, that *without grass*, severely cropped land

cannot be restored to full fertility; and *without cropping*, grass cannot be made to continue at the maximum point of verdure and utility. Lastly, I maintain no land, under any circumstances, ought to be cut in hay, if intended to remain some years in pasture; and if cut as hay, every kind of land ought to be directly ploughed, and again put through the rotation.

ON THE FOOT-ROT IN SHEEP.

BY MR. T. LEES, SOUTHSORE, BLACKPOOL.

(From the Veterinarian.)

SIR,—On reading your valuable work on the diseases and management of sheep, I was very much surprised at the different opinions stated as to the cause and contagiousness of sheep-rot. Of the cause, so far as the pasture is concerned, I will give you a history as it regards one flock. I could scarcely have thought it possible that any one accustomed to sheep should have doubted its contagiousness. The story which I am about to tell bears, perhaps, on both points.

I was shepherd six years where the flock was sadly afflicted with this dreadful disease. It was a large farm in Herefordshire, on the borders of Radnorshire and Shropshire, and the flock consisted of between 600 and 700 half-bred sheep between the Southdown and New Leicester. In one large pasture is a considerable plantation on the top of a sloping hill facing the sun. The pasture itself is as sound a turf as any in the world, an unsound sheep never having been known on the farm. When the trees were first set, the plantation was fenced in from the field; but, seven years ago, they having been large enough to be out of harm's way, it was thrown open. The sheep then got into it, and spent the greater portion of the summer-day in its shade. This plantation, although on the slope of the hill, is almost continually wet—partly from the dung and urine of the sheep, and partly from the rain that falls there, and the sun and the wind not being able to penetrate to the middle of it to dry it.

The consequence of the throwing open of the plantation was, that the sheep that were pastured in that field were afflicted with foot-rot. They had never been off the farm, nor had any other sheep but those of the same flock been with them.

Being now accustomed to the pasture, they still are subject to the foot-rot, although not so universally, nor in so inveterate and destructive a form, and as they grow up they obtain a kind of immunity from it; but every sheep that comes there has it, and every lamb that is bred there. The rams that are brought from different places, being always examined in order to see whether they are free from disease, are no sooner put to the ewes than they have the foot-rot, and so badly that it sometimes requires a fresh ram to every lot of ewes almost once a week. They come quite sound, yet in that little time they get so lame that they are not able to walk after the ewes, in order to impregnate them.

Some persons have had yards spread with lime, into which they have driven the infected sheep, and kept them there for a considerable time. They are said to have derived benefit from this. On the farm to which I allude, some of the advertised powders

were used, which kept the disease from proceeding to any serious length; but the labour of continually dressing them was really immense.

[We thank Mr. Lees for this practical illustration of foot-rot in sheep. We ask not whence our knowledge of the truth arrives? It is as valuable when coming from the shepherd as the veterinary surgeon, and will be as thankfully received. Why is not this plantation once more enclosed? The comfort of the shelter which it affords is far too dearly purchased. For the cure of foot-rot, the shepherd will find all that he wants in the butyr of antimony and removal to a drier pasture, and without any great expenditure of labour.—Y.]

TO THE MEMBERS OF THE STOCK-BRIDGE CATTLE SHOW.

GENTLEMEN, — Considering the decision of the Judges at your Cattle Show on Thursday last, to be very erroneous in many respects, from the prejudiced adherence evinced towards old breeds—leaving out of sight all improvements—both in wool, size, and symmetry of the animal, which the altered circumstances of this country decidedly require, and the improved system of cropping fully warrants the farmer in adopting, I take this opportunity of offering to show my Ten Ewe Tegs against any one pen, or all, there exhibited, *or which can be found in the United Kingdom*—symmetry, and value of wool and carcase, to be the criterions of merit—to have been wholly fed on arable land, and never to have eaten artificials. I am, &c.,

J. TWYNAM.

Whitchurch, Hants, April 19.

N.B. This will be open for fourteen days.

TO THE PUBLIC.

Having had the honour of being chosen the President of the last Stockbridge Cattle Show, I feel I am called upon to notice the observations of Mr. John Twynam, which appeared in the *Hampshire Chronicle* of last week, reflecting on the decision of the judges on the show day.

Mr. Twynam accused them of having decided very erroneously in many respects, and of being prejudiced in favour of old breeds. It is at all times an unthankful office to be placed in the situation of a judge of stock, and if gentlemen are to be accused of want of judgment by every unsuccessful candidate, there will soon be an end of such societies. I must say that I consider Mr. Twynam's observations ungenerous, and such as the public must have been surprised at seeing advertised. I do not admit for one moment that they were wrong in their decision, and I will candidly state my reasons. I consider the duty a judge has to perform, in looking at a number of pens of ewe tegs, is to select the pen containing the ten best, which he should prefer to take home to his own farm, to breed from for stock, and which, in his opinion, are best adapted for general purposes, looking to the county in which they are to be kept. The judges on that day decided on two pens of Southdowns, in preference to Mr. Twynam's half-bred Cotswolds, and because they did so, they are accused of want of judgment, and of being prejudiced in favour of old breeds.

If Mr. Twynam's sheep are so very superior to the Downs, it is very strange that all the farmers of Hampshire should have had their eyes shut for the last seven years, and not have adopted so superior a breed. There is one thing I should like much to know, which is, the reason those farmers who have crossed their flocks with the Cotswolds, or the half-bred ones of Mr. Twynam's,

give for discontinuing the practice. I know eight or ten of the best flock masters in this county, many cultivating more than 1000 acres, who have tried them, every one of whom has ceased doing so, and all have gone back to the Southdowns. I am ready to give Mr. Twynam their names, should he wish it. I state this solely to justify the decision of the judges at the last Stockbridge Cattle Show, and I think the public will give them credit either for their being in possession of the reasons why those farmers discontinued the Cotswolds, or that their opinion coincided with 99 farmers out of every 100—namely, that they are not adapted for this county.

I am sorry I have been placed in a situation which has obliged me to make these observations, as it is far from my wish or intention to prejudice the public in the slightest degree against Mr. Twynam's breed of sheep. I will give them credit, as half-bred ones, of being the best of the sort I ever saw, for symmetry, growth of wool, and weight of carcass; still I do not think them calculated for the generality of farms in Hampshire, where they are wanted to work hard for their living, and to travel, a distance, night and morning, to and from the fold. I will only further observe that the whole of the stock exhibited at the Stockbridge Show was put into about fifty pens, while the judges were out of the market; each pen was numbered, so that when the judges inspected the stock, they had no means whatever of ascertaining to whom the different stock belonged.

CHARLES FIELDER.

Sparsholt, April 26.

TO THE PUBLIC, AND SHEEP BREEDERS OF THE "OLDEN TIMES."

It is well observed, that a man is often better served by one false step of an opponent, than by the most strenuous exertions of himself or friends. This truth, I take it, will be amply illustrated in reference to myself, by the publication of the letter of Mr. Chas. Fielder, for which he has my most sincere and hearty thanks, giving me, as it does, an opportunity of proving to him and the public, that, as regards the subject in question, "*Nemo me impune lacessit.*"

Mr. Fielder attempts the vindication of the Stockbridge Judges, by expressing his wish to know "why those breeders who have crossed with the Cotswolds, *or my sheep*, have discontinued it?" I know nothing of what disappointments may have resulted from the use of other sheep—I confine myself to my own—to a sheep of a certain character and capacity; and will save Mr. Fielder the trouble of giving me the names of the breeders he alludes to, by supplying them myself, and should I have omitted any of consequence, he can make good the deficiency. I have supplied sheep to Mr. H. Pain, of Mitcheldever; the late Mr. Hayward, of Tufton; Messrs. Cozens, of Overton and Norton; Mr. Edney, of Quidhampton; Mr. Noyes, Thruxton, near Andover; Mr. King, Hungerford; Mr. Butler and Mr. Wintle, of Whitchurch; with many others in a small way. With reference to the two first of these gentlemen, I will ask of Mr. Pain and the surviving friends of Mr. Hayward, whether it was not their intention at the onset, to cross once round with the half-breds, with the view of giving more size, greater weight of wool, with more inclination to fatten, and then to return to the Downs again?—if so, having so crossed, and returned, with what fairness can this be stated in a public print, as an abandonment of the breed? I dare either to deny, but that the anticipated advantages followed—they are evident in their improved stock this day. Two hundred wether tegs, bred by Mr. Noyes, have been sold this spring at 55s. each together; 100 had cake, the other none—fed by Mr. Compton, near Hungerford. Mr. King sold 100 wether lambs at Lambourn Fair, on the 4th December last, *from a draft of 140 only*, at 43s. 6d. per head, fed entirely on green food, being at least 7s. higher than any Downs in the fair, although there were many of this breed superior to any ever before produced there;

and I hereby offer to show Mr. King's ewe tugs, sisters to these lambs, against any Southdowns in the kingdom, for symmetry, condition, and value.

Mr. James Butler, of Whitechurch, has this season, wintered 250 tugs together—many good Downs; of these 250 I sold him about 30 of my own and brother's culls on the 17th July last, being very late lambs, and the "scrubs" of the flock; these "scrubs" are at this moment at least 5s. per head better than the "flowers" of the other 220, from which no head lambs were ever taken. Here are facts, sufficient I presume, to carry conviction home to every mind. I have given the names, and not merely talked of doing so. I call for similar proof of good quality on the other side, and I defy a parallel to any such prices.

I now call on Mr. Fielder to meet me with these men of the "abandoned breed" by appointment, at Winchester, or other more convenient place—the whole I have mentioned—and I pledge myself to drive him from his position by evidence from the mouths of his own chosen witnesses.

I cannot, in an advertisement, go into the argument, why the breed best suited for Hampshire 25 years since, is the most *unsuited* now. I have done so frequently in the *Farmer's Magazine* and *Mark Lane Express*, and shall now only briefly remark that Australia is about overwhelming us with short fine wools; and that my firm belief is, in 10 or 15 years from this date, no short wool will be grown on the arable lands of England. On the other hand, the strongest inducements exist for the growth of an improved long wool; all Europe, and America, are becoming one vast manufactory (see the late corn law discussions), long wools must be had to supply it; and where is the spot upon earth so adapted, both by climate and pasturage, as England, for their production? These altered circumstances justify a decided change in the character of our sheep; the improved system of farming enables us to dispense with the breed which will bear starvation best, and to adopt that more in accordance with the wants of the grazier, the custom of the day, and the future prospects of the country. Vetches, rape, and turnips, supersede old rug, thistles, and barrenness; and I would venture to keep, under the altered and improved management, even the tender Leicester, on one-half the arable land in Hampshire.

Here then, Agriculturists of Hampshire, is my case; I have been roused to the battle—I will give or take no quarter—it shall be fought out. I have offered to meet Mr. Fielder with his own witnesses—I have given him prices realized by this stock, unknown to Downs;—I have given proofs of decided superiority, by the culls of this breed, far surpassing the flowers of another: I have left out of the question what price my own stock has realised, which far exceeds any here mentioned. I have called on the country to meet not only my own tugs, but those of Mr. King in competition;—THE KINGDOM STANDS CHALLENGED TO A TRIAL;—I am waiting its acceptance; in the absence of which I claim for the cross-bred—Cotswold and Down—decided superiority over the Hampshire sheep, in all qualities necessary to form the most useful and profitable animal. With this I take leave of the subject, until I meet with a competitor.

J. T. TWYNAM.

Whitechurch, May 2, 1839.

IMPORTANT CHEMICAL DISCOVERY.—

One of the most valuable improvements in modern times has lately been achieved in the manufacture of soda from common salt, by the use of carbonate of ammonia instead of the pestiferous method hitherto employed in the production of that alkali. The inhabitants residing in the vicinity of the soda manufactories at Birmingham, Liverpool, Newcastle, Glasgow, &c., owe the inventors of this invaluable improvement a heavy debt of gratitude, as by this discovery they have put an end to the dreadful nuisance which the public have so long endured. The necessity of decomposing the chloride of sodium by sulphur no longer exists, the newly-discovered

process being perfectly free from all noxious vapour. Another important advantage is also secured—namely, that the improved method can with little additional outlay be adapted to the manufactories at present in operation, and the workmen who have hitherto been frequently thrown out of employment and subject to the loss of their wages in consequence of the numerous indictments that have been laid against their masters for nuisances, will no longer be subjected to this evil. This process, when submitted to an eminent chemical lawyer for his opinion, was pronounced by him to be one of the most brilliant and ingenious discoveries in modern chemistry.

SITUATION OF AN APIARY AND BEE PASTURAGE.

I agree with Mr. Payne in the following remark.—"I have no hesitation in saying that a south aspect is decidedly preferable to any other position for an apiary. I have tried various aspects, but the bees in the south I have always found to be the healthiest and to collect the largest quantity of honey. It is very important that the hives should be sheltered from the wind by trees or houses, and that they are not placed in the vicinity of ponds or large rivers, for the high winds will dash them into the water where numbers will perish."

Circumstances may interfere to prevent placing the bee stands in the exact position here recommended, in which case they may be turned a few points east or west, but at all times a preference should be given to the former, for the hot afternoon sun ought to be avoided if possible. I prefer placing the bees on a grass plat, the drier the better, and if not otherwise well sheltered from the wind, planted with evergreens, particularly at the back and towards the south-west, nothing high should be allowed immediately in front nor towards the south-east; but a few shrubs of no greater height than the alighting-boards of the hives are rather an advantage as a resting-place to the bees on their return from work. All should be kept clean and well mowed around, and nothing offensive be permitted to remain in the vicinity.

When once fixed do not move your bees, the mischief of which I have often witnessed. I cannot enforce this recommendation better than Gelien has done. "I have seen people," says he, "shift about their hives very inconsiderately, but change of place invariably weakens them, as the bees will return to their old residence, the environs of which are so familiar to them. A hive should remain fixed to the spot as the ancient oaks, in the hollows of which they delight to establish themselves, where they have their young companions, their beloved queen, and all their treasures. When the young bees take wing for the first time they do it with great precaution, turning round and round, and fluttering about the entrance to examine the hive well before taking flight. They do the same in returning, so that they may be easily distinguished conducting themselves nearly after the same manner as the workers of a newly hived swarm. When they have made a few hundred excursions, they set off full flight and well know their own hive in the midst of a hundred others; but if you change its place you perplex them, much the same as you would be if during a short absence some one lifted your house and placed it a mile off. The poor bees return loaded and seeking in vain for their habitation either fall down and perish with fatigue, or throw themselves into the neighbouring hives where they are speedily put to death. When hives are transported to a considerable distance there is no fear that the bees will return, but this inconvenience would be sure to take place, and many of them perish if they were removed only a few hundred paces from the spot where they had been accustomed to. The hive may not perish, but it will be greatly weakened. In my opinion, if the situation is to be changed at all they should be removed at least a mile and a half. This ought to be done in the winter.—Taylor's Bee-keeper's Manual.

ON THE CULTIVATION OF TIMBER TREES.

It is a remarkable circumstance, that they who have written upon the cultivation and management of timber, and they who are entrusted with the care of it, should have omitted to make themselves acquainted with the manner in which it grew spontaneously in the ancient woods and forests, and should have adopted without any inquiry, an artificial system, at variance with every principle of nature.

The commissioners of the office of woods and forests, their inspectors and surveyors, and also the owners of estates and their agents, have been the dupes of the nurserymen, who have uniformly recommended the pine class and other trees which produce timber inferior to the COMMON BRITISH OAK. On whom the blame rests for having in the first instance advised the mixture of so many kinds of trees, it is unimportant to inquire, but a universal adoption of the plan is a matter of astonishment. Many acres of pines have been planted for game covers, and the practice is continued, although it is not the best arrangement that could be made, inasmuch as when the tops of such trees ascend to ten or twelve feet, the lower branches die off, and then the game are as much exposed as if there were no trees.

The wood agents have followed the practice of their forefathers in thinning the old woods, utterly regardless of the young trees springing spontaneously amongst the old ones, and which they have cleared away with the underwood: hence the system has worn itself out. The author speaks of facts: in many woods all the timber has been cut, and the few small trees which have arisen by chance are generally bush headed, short stemmed, and show no signs of growing to maturity. The chief reliance for a profit appears to be upon the growth of underwood. Profit from the growth of oak seems to be a complete casualty.

The adoption of the pine class of trees as a substitute for oaks also exhibits an unaccountable absence of inquiry; previously to so extensive an introduction it ought to have been ascertained whether the quality of the pine timber grown in this country would be equal to that produced in the severer climate of their native regions. Those persons who are intrusted with the care of estates where the oldest pine trees are standing (provided there was an inclination) could answer this question satisfactorily. As the excellence of English-grown fir timber has not been proved, there is reason to believe that it is very inferior to that imported. This is not from the deficiency of size, as there are trees which would cut into boards of the same length and width. If the qualities are equal (which is implied by the continuance of the formation of plantations of pines) how does it happen that the agents sell the produce of the estates of which they have the care, at so inferior a price, IN LOTS, and not by measure, as oak timber is sold? The truth is, the quality is so inferior they are glad of a customer, and will generally take any price offered. Although many inquiries have been made, only one person could be found who had bought home-grown fir by measure; he gave the magnificent sum of sixpence per foot!! one seventh of the price of oak. Notwithstanding this, land agents continue to purchase larch, Scotch, and spruce fir plants, of the nurserymen, as if Britain had no native trees worth cultivating. They appear spell-bound to an erroneous system; one of them has even ventured to declare that no improvement can be made and no inquiry is necessary; although he could get no more for larch poles of eighteen years standing, (it can hardly be called growth) than one penny each!!!

The professional planters also styled themselves *pruners* (Pontey for instance): if in the former character they had recommended planting trees of one species very closely together, there would have been no prospect of employment in the latter capacity; because there would have been no horizontal branches to be cut off. It is hardly possible that they could really believe that the system which they recommended was in accordance with the operations of nature, or that it was the most advantageous one that could be adopted by their employers.

The same system has been recommended for the south of England as for the north of Scotland, notwithstanding the great difference of the climate; in the latter there are "natural pine forests," the timber of which is stated to be of excellent quality and full of turpentine, and which no doubt is matured by the coldness of the situation:—verging upon perpetual snow.

The first introducers of these trees into the midland and southern parts of Britain, must have stated some reason for the preference, but it could not have been the superiority of such timber over that of oak, nor that pines would grow better on inferior soils than the native trees, because in every part of the kingdom, oak is to be found growing on poor soils of all kinds. Larch, &c. have been planted amongst old oaks, as if they were of equal, if not superior value to the native trees; in other places they are used as nurses for young ones. This favours the opinion that the advocates of such a system were deluded by the notion that the rate of growth of the pride of our forests was inferior to that of the pine class. Indeed, there is a sort of traditional belief in many parts of the kingdom, that oak is a slow growing tree, a belief which was in all probability induced in the first instance by its longevity, and afterwards strengthened by the erroneous system of cultivation. But the measures of the size of various kinds of trees, near oaks, given in the following pages, show an *equality of growth* which at once proves that the preference for exotics is both undeserved and indefensible. It is most extraordinary, that there should be authors who admit this equality, and at the same time persist in recommending fir trees.

The present system of managing the pine plantations has also run its length, for there are very few trees of fifty feet in height, that are not stunted and decaying, or decayed; indeed, similar effects are to be seen in many under that height, although, by a reference to the authorities, it will be found that it is not more than one-third of the average height to which they grow in their native woods and forests.

Matthews says, "there must be some constitutional tendency to corruption in the larch, as the rot is often found to take place in the most luxuriant growing plants in open situations, branched to the ground, and growing in deep soil, free from stagnating water." (p. 81.) The truth is, that larch grows at a great rate on rich soils, therefore it requires impervious shelter, that its leading shoot may be uninjured by the wind. When injury takes place, branches extend themselves from the middle part of the stem, but, at the same time, decay commences in the centre of the lower end. It may have been that the plantations which are now decaying required thinning, but there was certainly no occasion for the axe to be laid to the root so frequently and extensively. "It wrought destruction where it should have spared." There is ample evidence that many plantations have been ruined by premature thinnings; amongst others, those belonging to the late Bishop Watson, whose publication at least sanctioned, if it did not originate the baneful practice. Of this fact I was informed by a gentleman who has a brother living in the neighbourhood. There is also some reason to doubt whether the kinds of trees which grow to so great a height will arrive at maturity on situations where they have been planted, even under the most skilful management.

The question as to the quality of the timber of larch appears not to be sufficiently attended to. "Larch is valuable only for the grosser parts of buildings, as beams, &c.; for the finer parts, it is much disposed to warp and so difficult to be worked, as generally to preclude its use." (Matthews, p. 103.) This is a well known fact,—ladders made of it have become so twisted as to be unfit for use. He also states, "it yields to the depredation of the insects as soon as any pine timber, and that the sea worm devours it in preference to almost any wood;" and that "some experiments were made at Woolwich, in trial of the comparative strength of it and other pine timber, when it was stated to be inferior to Riga and Dantzic fir, pitch pine and even yellow pine."

Surely these important facts ought to be urged against its general introduction into plantations, as it tends so

materially to diminish their value. Yet, we repeat, it is used by the planters of the present day as if it were equal, if not superior, to oak timber for general purposes.

Matthews reviews Billington's practice in Dean Forest somewhat sharply; indeed he has a good title to do so, if the system pursued is not better than that which is practised in the Royal Parks near London. Yet instead of correcting him he falls into an error equally glaring. The larch are recommended to be preserved, notwithstanding his account of the inferiority of the timber, and the oaks to be cut out; probably if the larch had been trimmed on the sides nearest the "stunted oaks," and these trees cut down, they would, the following year, have produced large shoots from the stubs, which, in a few years, would have grown to the height of the larch, but it is seldom, if ever the case, that in mixed plantations, they grow to their full and natural altitude.

It, however, requires extensive practical knowledge to secure a crop of oaks in mixed plantations; it is not only the most expensive method, but the slowest, however skilfully the trees may be PRUNED AND THINNED; therefore it is the least profitable.—*Growing Gold*, by James Sawyer: Simpkin and Marshall.

COMPARATIVE PHRENOLOGY.

BIRDS.

BY S. L. LEVISON.

(From the Naturalist.)

In introducing to the readers of the *Naturalist* the fertile subject of Comparative Phrenology, I would request their attention to a few well-ascertained observations—1. Comparative Anatomy demonstrates that the brains of animals are differently formed whenever there are any marked differences in their disposition, temper, or intelligence. Thus, when there is manifested very little if any individual consciousness—the actions being more automatic than voluntary—the brain is extremely simple, but when animals indicate positive mental perception so as to direct in a voluntary manner, their own actions, the brain is more complex in its parts, and more amplified in volume. 2. These statements are easily corroborated by observing the constancy of particular forms of brain, with certain effective and intellectual faculties, and are valuable not only to the zoologist but to the physiologist, as they verify the truth of Phrenology and show its importance in explaining the philosophy of the habits and instincts of animals. 3. However, it should be remembered that there are greater difficulties to contend with in the study of Comparative Phrenology, than when examining a number of human heads or skulls. Yet patient and careful observation will reward the inquirer for any trouble he may incur. He will have accurate and sound physiological data, and a definite vocabulary, and he will then not be obliged to use the ambiguous term *instinct*, to designate in animals all their feelings and propensities as well as their various perceptive powers. He will not, therefore, confound actions which are impulsive, or affective with others which are discriminative and intelligent. Having obtained a correct knowledge of the attributes of animals, in connection with their cerebral organization, and the relative position of the groups of faculties, his task is both satisfactory and interesting. The social and domestic propensities are located, as in man, in the occipital region, the prudential at the base, and the intellectual in the forehead. If we examine the crania of any one genus, it will soon be recognized that there is a certain general configuration, and when the departure from the standard is more or less great, we have positive and natural data for species and varieties. Warblers for example, have all rounded foreheads, amplified in the degree of the musical capacity, but the nightingale presents a striking difference to the black-cap, although they resemble each other in melodious power. They

are both full in the region of melody and time, but the nightingale is broad at cautiousness, which might be anticipated from its solitary and timid habits, whilst the black-cap is more friendly, and indicates much less breadth of head in the region of cautiousness.

It may be worthy of remark, that in our attempts to ascertain the mental faculties of animals by means of their cerebral organization, there are found many difficulties, but the skulls of birds form an exception.

Quadrupeds, for instance, carry their heads in an horizontal position, sustained by very powerful muscles and ligaments, inserted in a ridge of bone at the back of the skull, and which in some measure is an obstacle in ascertaining the character of animals during life, as the external skull does not indicate the form of the brain enclosed within it. With the skulls of birds we have less difficulty, as they are the exact shape of the brain within them, and the bones are so fragile that very often they are not thicker than a sheet of writing paper; hence the form of the skull is seen to be the fac-simile of the brain within. I may mention a very interesting fact in proof of this. A gentleman one day visited my museum, and I was examining and arranging the birds' skulls. He looked at them, and then not only pointed out the warblers, divers, waders, &c., &c., but also distinguished the species; and this, be it observed, by no factitious aids, the skulls having been deprived of their integuments and feathers by means of maceration. Hence it is that the skull will be ultimately the best index for distinguishing by so much more definite means than the beak or the feet, the genera and species of birds. In other words, the shapes of skulls, indicating the form and volume of the brain within them, will enable us to decide on the mental qualifications of birds, because we are thus made cognizant of their cerebral organization.

There is greater difficulty in distinguishing the species of birds by a casual glance at their heads and plumage to the tyro in ornithology, than when we compare their skulls together, yet when once the latter desideratum is obtained, the cerebral condition of any marked difference in the habits or mental capacity of birds and are not merely learned in names.

The other day I visited the excellent museum of Mr. Hugh Keid of this town, and I had an opportunity of examining a great number of birds, but for the present I will only mention the woodpecker. They have a well marked difference of form of skull in each species, indicating some modification in their habits, hence supposing I had forgotten the name of any one of them, if the specific term had been adapted from some mental difference instead of the accidental difference of size or plumage, then the instant the head or skull was shown me all the particulars would be remembered as well as the name by which it was distinguished. When the attention is given to things rather than words, and the latter are used only as conventional media of communication, and deemed valueless unless we know the definite meaning associated with them, then there will be a more philosophic mode of arranging animals. If the

"Mind's the standard of the man," then also we should use the mental differences of the lower animals in distinguishing them.

In concluding this mere introductory paper, I would call attention to the following general facts,—1st. That birds of prey are broad from ear to ear, having a similar configuration of skull as is observed in carnivorous animals, being large in the regions of combativeness and destructiveness, and that it is possible to decide by the skull whether they are very courageous and open enemies of their victims or cunning, savage, and treacherous. 2nd. That timid birds, (like cautious quadrupeds) have the middle part of the parietal bones broad indicating a large development of cautiousness. 3rd. That building-birds show more or less ingenuity in their nests in proportion to the development of constructiveness and the perceptive faculties, and that they present a striking contrast when placed in juxtaposition with birds which do not build. In my next paper I will illustrate these statements with some facts in proof of their correctness.

THE PRIZE ESSAY OF THE ENTOMOLOGICAL SOCIETY ON THE TURNIP FLY AND OUR "REVIEWER."

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—My attention has recently been called to an article which appeared in your magazine for February last, in the form of a review of my paper on the Saw-fly of the turnip, published last year by the Entomological Society, and for which they awarded me their prize. I must confess, that at first I was much surprised at the evident want of courtesy on the part of the writer, and at the superabundance of a feeling very much resembling the bitter vexation and anger of a disappointed candidate or his friend. This is so apparent throughout the whole article, that I should not have troubled myself to put pen to paper in reply, feeling, as I do, that most of the remarks, so far as myself is concerned, carry with them their own explanation, were it not that there are also others which might possibly lead some persons to suppose there had been some unfairness on the part of the Committees of the Entomological Society, and the Saffron Walden Association in their adjudication of the prize. It is therefore incumbent upon me, to trouble you with a few words, which I trust will show, that neither of these bodies could possibly have been influenced by unworthy motives in their award.

The writer of the article in question, after alluding to the period at which the papers were to be delivered to the Society, and after quoting a passage from the address of the President, at the general meeting in January 1838, stating, that at that time, only one essay, but that, "apparently a very valuable one," had then been sent in—broadly ventures to assert, (for he has not the manliness to state it openly, even in his anonymous character of reviewer) that the essay alluded to by the President has been kept back by the Society for some private reason.

Now for the information of your dispassionate readers, I am enabled to affirm, that the essay published is the identical one alluded to by the President, and that the following are the facts respecting it. It was delivered to the Society some time prior to the general meeting, on the fourth Monday in January, and both the authorship of the paper, and the hand in which it was written, were totally unknown to any member of the Entomological Society, until after the committee had decided in April (and, as I have since learned, unanimously,) on the respective merits of the papers in competition. Besides the published essay alluded to, in the President's speech, two other papers were subsequently received by the Society, one of them not until at least a fortnight after the general meeting, when the committee determined, in order to allow of, and encourage the fullest competition, that both these papers should be admitted, although one of them was received so long after the period inscribed. When the papers had been examined by the respective members of the committee, which necessarily occupied much time, it was announced to me that the prize was awarded, and the secretary then expressed a wish, on his own part, that additions of the digestive organs of the caterpillar should be made to the anatomical details, which, whatever value your reviewer may feel it convenient to attach to them, certainly were not considered by the scientific body that offered the prize, at all to

deteriorate the value of the paper. In the following month, the paper was returned to me, and I complied with the wish that had been expressed, and included at the same time what other information I had gained, purposely marking dates and periods, to show what facts had been introduced subsequently to the award on the paper; it being thought preferable to incorporate the additional matter in the text, rather than add it in the shape of notes. Perhaps your reviewer, Mr. Editor, or one of the gentlemen whom he alludes to so particularly as an authority, may not be in the habit of inserting acknowledgements of this kind in his writings, but surely all persons ought to be aware that this is a course of proceeding imperatively required by all societies, when additional matter is subsequently added to papers already received by them.

These remarks may explain some of the mystery which your reviewer has discovered in this matter, and which he states is so "*exceedingly strange, and seemingly inexplicable*," asserting at the same time a *direct mis-statement*, namely, that the prize essay was not published "*until the November following*." I know not whether to attribute this assertion to mere ignorance, or to a convenient forgetfulness on the part of the reviewer, but if he turns to the report of the proceedings of the Entomological Society, at page 517, vol. 5, of the *Entomological Magazine*, a work which he is evidently acquainted with, as he quotes it for another purpose, he will find that it was announced at the meeting of the Society on the *sixth of August*, that the essay was then published "and ready for delivery to the members."

With regard to the remarks on the paper itself a very few words will suffice, since your reviewer has had the hardihood to controvert the statements contained in it without adducing any evidence to disprove them, or to show that they had previously been noticed, saving only that of James Rennie, Esq., whose notice of "a caterpillar belonging to the saw-fly family" "*apparently of the genus *Athalia**," in his "*Insect Transformations*," page 218, and which is referred to by your reviewer, is simply a summary of that formerly given by Mr. Marshall, together with certain *opinions*, on the consideration of which I shall not enter. It is sufficient for the Society and myself, that the contents of the essay are now known to the practical naturalists and agriculturists of this country, who will render then impartial justice; and I may here add, that I am not a little gratified in being able to state my knowledge, that some of the remarks controverted by the reviewer, on the habits both of the caterpillar and perfect insect, have already been confirmed by a *practical* agriculturist. To the reviewer's assertion that *ten days* is known to be the period which the insect continues in the egg state, a point of much importance to the agriculturist, I simply repeat the statement, that in my observations, made as noticed at a certain temperature of the atmosphere, the young larva made its appearance at "about the *fifth* day from the time of deposition" of the egg. Every *practical* naturalist is aware that the development of the eggs of insects is greatly dependent upon the temperature of the season, hence I have stated in the essay, that in unfavourable seasons this length of time is extended. In conclusion, Mr. Editor, I beg to thank your reviewer, both on the part of the Entomological Society and myself, for the kind information he has afforded, that the habits

of the insect in question, were "better known fifty-five years ago" than at the present time; and I cannot refrain from offering him my congratulations at his good fortune in thus being the only one who has made this discovery, among the many hundreds of naturalists who have directed their attention to this insect, and who appear to have been quite as well acquainted with the accounts previously given of it as himself. Feeling assured you will do me the justice of allowing this to appear in your next number, I remain sir, your obedient servant,

GEORGE NEWPORT.

16, Grafton-street East.

May 8.

A FEW THOUGHTS ON AGRICULTURE.—DRAINING.

The kind of draining which would be most effectual is not difficult to choose. The greatest obstacle to fertility is the stagnant water spread extensively upon a retentive subsoil, and the only kind of draining which is efficacious for its removal is not the very deep and distantly placed drains, which are admirably suited to the removal of springs or spouts, as they are called, whether superficial or deeply hidden, but the more shallow drain frequently repeated, for *deep drains at considerable distances cannot draw water at those distances from impervious subsoils*. The depth and the distances between the drains depend entirely on the openness of the subsoil. But it is easy to fix the *least* depth. No kind of drain, on any pretext, ought to have a *smaller depth of stones* (if stones are used) *than eighteen inches*, nor a *smaller depth of earth above them than one foot*, so that *no drain should be less than thirty inches in depth*, nor need the *greatest* depth, of shallow drains exceed *three feet*. The width should allow a man to work freely in them. The distance between the drains has been fixed at the breadth of a ridge, that is, in every furrow. Where broad ridges are used in strong clay land the distance is often too great to do much good. Where it does not exceed fifteen or eighteen feet, according to the tenacity of the subsoil, the distance may be considered proper.

Much has been urged in favour of making the drains up and down the declivity. We confess we see no particular charm in the perpendicular position; on the contrary, we see many objections to it. We hold it to be a maxim in draining, that rapid descents of water in drains is incompatible with the maintenance of good workmanship. Water descending rapidly any where gutters the ground, and so it will in any drain. Besides, the perpendicular position is not the most favourable for intercepting the water in its descent; because it is very rare that a declivity presents only one declination; it is almost always attended with two, one up and down, and another from side to side, in the horizontal direction. Down such a declivity the water will take a diagonal direction, guided by the degree of the lateral declination. Now, it is as obvious as any demonstration in dynamics, that drains placed in parallel lines declining down the face of a declivity, having a two-fold declination, that is, diagonally, will afford a much more easy passage for a current of water than any other direction. The more easy the

egress of the water the more gently will it run away, and the more effectually will it dry the land. The only reason for placing drains up and down is that the furrows are so placed; but it would be better to make the ridges run diagonally, than allow water to run quickly in a drain in a perpendicular direction. Drains may be made of various materials, according to the locality. Tiles, or small broken stones, are, however, the best, but the drainer should be very careful in the selection of his tiles, for many tiles which we have seen are not trust-worthy. They are either *too much* or *too little burnt*. We have seen a night's frost break the whole tiles laid down for a drain. Luckily, they were broken before they were used; but why are such spongy tiles sold to deceive the public? A well-baked tile is, however, easily known, by giving a ringing sound when held in the hand on being struck; a bad tile, on the contrary, sounds quite dead and dull. We have seen drains taken up on account of a stoppage, when it was found, on admitting the air, that the tiles for some distance from the opening mouldered down on account of having been imperfectly burnt; there are, we have no doubt, many drains that have been formed with such tiles, and which must, in the course of a few years, become perfectly useless. Good tiles, on the contrary, will last for ages. Tiles have been taken up in Lincolnshire and other places whose age is unknown. The many Roman pavements that have been dug up in England, and formed of flat burnt clay tiles, are as perfect as the day they were made. The round water pipes also laid down by the Romans have been found under the earth in an equally perfect state; but that is only to be accounted for by their having been so perfectly and scientifically burnt.

Tiles should never be laid in clay lands without soles, for in time they will assuredly sink into it. In such land stones should, if possible to be obtained, be always placed above tiles to keep them in their places, and the remainder of the drain filled with small stones, dried peats, gravel, brushwood, or such like porous substances, especially in clay, where it is absolutely necessary, otherwise the clay will bind over the tiles in a few years.

This species of shallow draining possesses the advantage of being applicable to every kind of soil; and it will certainly relieve any soil which is afflicted with stagnant surface water. If generally practised it would effectually drain the whole country, and remove the chief obstacle that exists to perfect fertility of the soil. Were the soil thus fertilised the produce of the country, whether in corn, straw, green crops, or pasturage, would be increased many fold. Wheat and live stock would then be sufficient to supply the wants of this country without our having recourse to a foreign supply; constant employment would also be provided for the agricultural population during those improvements and for the time to come. Nor is such a national scheme of improvement wild or imaginary. Many proprietors and farmers possess the means, in a greater or less degree, of accomplishing it on their estates or farms, and those who have not should be assisted by the State. Much public money, it is feared, is thrown away in doubtful expediences, and much applied to pernicious purposes, which, if employed in draining the land, would increase its resources beyond credibility. One sheep additional, or one quarter of corn more, raised on an acre, would add millions a year to the wealth of the country.—*Carlisle Patriot*.

THE APPLE.

Of all European fruits the Apple (the *Pyrus Malus* of botanists) is unquestionably the most valuable and by far the most generally cultivated within those latitudes in which it is found to thrive. At what period, or in what manner it first became known to the inhabitants of this country is involved in the obscurity of antiquity, for the wild crab is the only fruit of the kind indigenous to this country, or indeed to any other, and from it at some period, and by some means or other, all our improved varieties have been obtained. The cultivated apple owes its existence to the art and industry of man, and is not, although asserted by some, the natural production of any soil or climate. It is a mere conjecture to suppose that it was not known in Britain prior to the Roman Invasion, but that it was introduced by that people. Tacitus writing in the year seventy-nine, informs us that there is great probability for thinking that the soil and climate were very fit for all kinds of fruit trees except the vine and the olive; wine was however made in Britain in the third century, but no mention is made of the Apple. That the Apple was cultivated by the Romans in Italy in the days of Pliny is very certain, as it is recorded by him (Lib. 15) as being well known, and not only does he allude to twenty-two kinds, but these he divides into eating or sweet apples, (*Melmala*) and culinary or kitchen apples, and one sort in particular he mentions which was destitute of kernels, but in no part of his writings does he allude to their being grown in Britain. It was probably not till after the Norman conquest, that Apples were much known or cultivated in this country, and it is reasonable enough to suppose that they were introduced from the fertile orchards of Normandy, as soon after that date as the state of society would admit of the minds of man being directed to more peaceful pursuits than that of war.

The historian Stow, informs us that Pippins were introduced by one Mascal, about 1572, contemporary with Tusser, in whose five hundred points of good husbandry, apples of all sorts are mentioned, and Parkinson, in 1629, distinctly enumerates fifty-seven sorts. Evelyn in the preface to his *Pomona*, informs us, that one Harris, a fruiterer to Henry VIII., introduced the fruits of Flanders, and planted them in Kent, no doubt laying the foundation of those orchards for which that county has ever since been so conspicuous. The Herefordshire orchards, if not principally formed were very much augmented by the introduction of most of the best cider apples from Normandy and other parts of France, by Lord Scudamore, who was Ambassador at the court of Paris in the time of Charles II. If Hallar however be correct in estimating the longevity of the Apple the Herefordshire orchards must have existed from a much earlier period as that author asserts that there was trees in his time that had attained a thousand years, and were still productive. The late Thomas Andrew Knight, Esq., than whom few were more competent of judging, was of opinion that two hundred years are nearer the ordinary duration of the Apple Tree, an opinion from which we think few modern vegetable physiologists will venture to dissent. The Apple we consider even grafted on the crab stock to be a tree of much shorter duration than the pear, which latter we doubt not is capable of attaining an age of five hundred years, and even upwards; of all the fruits that are produced in our climate none is brought to so great perfection as the Apple, and with so little trouble, nor amongst them is there any comprising so many varieties, affording as it were, a choice for every soil, situation, and climate which our Island

affords. The Apple is the fruit of the poor as well as the rich, it is capable of being had in perfection throughout the year, it forms an agreeable addition to the food of Man, and also supplies him with a beverage as wholesome and pleasant, and as exhilarating as any of the wines of which the Rhenish provinces can boast. It is not generally known in this country, that the refuse of the orchard and fruit-room when past all other use may be manufactured by the ordinary processes of fermentation and distillation into an excellent brandy, and indeed a very great portion of the brandy of France is made from this fruit; how far the manufacture of that spirit for home consumption might affect the interest of international commerce, is no concern of ours; we state the fact to show, that should political circumstances arise to impede or prevent the importation of this spirit from the continent, we have a resource within ourselves which would go far to supply our own consumption. This supply might be very greatly extended, as hundreds of acres in Britain, at present uncultivated, would produce the Apple in great abundance. The medicinal properties of the Apple are considerable, verjuice, or the juice of wild crab is a valuable astringent and repellent, and has been long used as an application to sprains. The fruit of the cultivated Apple when ripe is laxative, and when boiled or roasted it has been found serviceable in cases of indigestion and weakness of the stomach, and also in putrid and malignant fevers. As connected with the arts, the bark is used in dyeing a yellow colour, and the wood for turning and other purposes, where hardness and variety of colours are sought for, the pulp mixed with lard forms pomatum, and its uses in confectionary are many and well known.—*The Orchard*, by Charles M'Intosh, F. C. H. S.

CARROTS.—To procure young carrots throughout the summer and autumn, seed must be sown of the early horn kind about every six weeks, from the end of February till the beginning of August, the last sowing is made for plants to stand the winter and afford young roots early in spring. For the general and principal crop, the author has found the second or third week in March to be a good season, though he has known good crops produced from sowing at the end of April and beginning of May, this however depends entirely on the weather. In sowing carrot seed, a calm day should be chosen as the seeds are very light, they should also be rubbed between the hands and mixed with some dry sand or wood ashes to separate them as much as possible. The common method of sowing them is upon beds three or four feet broad, and afterwards raked in smoothly and evenly, the teeth of the rake ought to be wider than are generally used, as the seed is apt to be drawn up in heaps. The author considers that sowing the seed in shallow drills nine or twelve inches apart, is a preferable way, as it admits of the hoe being made use of with greater facility in thinning and cleansing them from weeds, and in a given space of ground, a greater crop and finer roots can be produced than by sowing broadcast in beds. As soon as the plants are up and can be well distinguished, a hoe, about three or four inches broad, should be used to thin and clear them from weeds. Thin from three to five inches distance, such as are designed for showing young; but the main crop intended for large and good sized roots, must be thinned to six inches. The whole should be kept clear from weeds in their advancing young growth. Towards the end of October, they will have ob-

tained their full growth, and in the beginning of November, as soon as the leaves begin to turn yellow, the roots can be taken up in a dry day, the top being cut off within an inch or two of the crown, and can be packed among dry earth or sand in the store-house for winter use. They will keep well pitted, the same as potatoes; in either way if frost be excluded, they will keep perfectly well until March or April of the following year.—*Vegetable Cultivator*—By John Rogers: Longman.

A CASE OF A HORSE SWALLOWING SPONGE.

By G. RICKWOOD, ESQ., V. S., BEDFORD.

(From the *Veterinarian*.)

On the evening of the 14th of March, 1839, I was called on to attend a horse, the property of a gentleman in this neighbourhood. The animal having just returned from a journey, had, an hour previous to my seeing him, swallowed a large piece of moistened new sponge which lay in the stable. Not having any practical knowledge of the result of such an affair, I was induced, in some measure, to fall in with the prevailing opinion of the great improbability of such a substance being either expelled undigested, or capable of digestion. However, I gave him immediately an ounce of Barbadoes aloes, with a drachm of calomel. I also ordered him to be kept from both food and water during the night; for I reasoned that, from the great power of capillary attraction which the sponge possessed, it would probably absorb a sufficient quantity of the juices of the stomach to fill all its pores, and the water, by diluting the gastric juice, might lessen its solvent power.

On the following morning he seemed to be free from pain or fever, and I ordered a few carrots to be placed before him. These, however, he refused.

On the 16th he continued apparently easy, and without any indication of pain, and I allowed him a small portion of wetted hay, but no water. The physic had not produced any effect, probably because I had interdicted the use of water. In the evening he began to be very uneasy, and was frequently pawing and looking round at his flanks. I repeated the medicine. In the course of the night his restlessness increased to a very alarming degree, and he was evidently suffering intensely. This, however, subsided before the morning.

On the 17th he seemed to be tolerably comfortable, and I allowed him about three pints of warm water. In the evening the physic began to produce the desired effect, and he voided a moderate portion of digested fæces, but somewhat harder than of its natural consistence.

18th and 19th.—His bowels gradually assumed their natural action, but there was not any purging, properly speaking, nor any thing to indicate that he had taken so much aloetic medicine. He was allowed small quantities of water and wetted bran.

On the 22nd he remained free from pain, but, the bowels continuing somewhat costive, I gave a third dose of medicine, which, on the following day, mildly but sufficiently operated, and convinced me that no obstruction remained. The patient was therefore dismissed.

No portions of the sponge could be detected in any of the evacuated matter, but the whole of it must

have been dissolved, or, in other words, completely digested. Believing it to be the general opinion that sponge is rarely or never digested, I have been induced to send you the particulars of this case. The horse, perhaps, is less liable than many other animals to be injured by swallowing such a substance, on account of the intestines having in him so great a share in the digestive process. In most other animals it is nearly completed in the stomach. I attribute our patient's recovery to the time which was thus allowed for the perfect digestion of the sponge.

[We thank Mr. Rickwood for this interesting case. We believe it to stand alone in the history of veterinary practice.—Y.]

INFANT SCHOOLS OF HORTICULTURE AND AGRICULTURE IN FRANCE.—*Copied from the Labourer's Friends' Magazine, for April, 1839.*—An establishment has lately been formed in the department of Gard, for giving practical lessons in horticulture and agriculture to children. Full success has attended the attempt, and the example is about to be followed in other quarters. Two acres of empty land were divided into nursery, corn land, flower gardens, and kitchen gardens. All the inhabitants of the neighbourhood assist in conveying instruction to the children, or in smoothing their progress. A regular instructor is appointed, who gives lessons on gardening, in which he is aided by the cultivators who live near. The Mayor and the Curé employ their influence in putting aside such obstacles as prejudice or long-established custom might throw in their way. The forest ranger is useful in pointing out the exact state of the laws respecting trees, and the proprietors of land supply seed, corn and flowers. Half of the produce is given up to the instructor, a portion of the other half is distributed as a recompence amongst the pupils, and the remainder is sold to the inhabitants of the village. After some time a considerable sum is raised from these sales, the money is laid out in defraying the general expenses, in purchasing tools, in providing seed without being indebted for it to the kindness of the proprietors, and in increasing the emoluments of the instructor. The little farm is thus found to advance rapidly to perfection, and in a short time is the most productive spot of ground in the country; of course it is understood that all the work is done by the pupils; were it otherwise, the object of the institution would be entirely lost, as practical instruction would no longer be given. These infant schools for horticulture and agriculture are on the increase in France.—*Journal d'Agriculture Pratique.*

A JUST AND GENEROUS LANDLORD.—Mr. Sharp, the landlord of the posting inn, at Scarthing Moor, complained to his landlord, Earl Manvers, that owing to the preference given to railroad travelling, and to other causes, it would be impossible for many of the innkeepers to keep their doors open without some abatement could be made in their rentals, and instanced his own undertaking as an example. Earl Manvers immediately inquired of his steward what was the rent per acre paid for the land attached to Mr. Sharp's farm. Mr. Simpson replied 27s. per acre. "Then," said Earl Manvers, "let him pay 27s. per acre for the land, and let us sink the rent hitherto paid for the house." The effect of this decision of his lordship is, that Mr. Sharp's rental has been reduced 72l. per annum. This act of kindness and consideration on the part of Earl Manvers, is doing justice to the claims of Mr. Sharp, who is a kind hearted man, and an excellent tenant; whilst, at the same time, it reflects a lustre on the character and motives of one of the very best of landlords.

AN EXPERIMENTAL INQUIRY INTO
THE INFLUENCE OF NITROGEN
ON THE GROWTH OF PLANTS.

BY RORERT RIGG.

About two years ago I had the honour of laying before the Royal Society an experimental inquiry into some of the chemical changes which occur during the germination of seeds and the decomposition of vegetable matter. On the present occasion I purpose to confine myself to an extensive series of experiments which have reference to the presence of nitrogen, earths, and salts in vegetable compounds, with a view of directing attention to the influence of nitrogen in the growth of vegetables.

As my inquiry is purely experimental, I may premise that I have had recourse to the well-known method of ultimate analysis, and the equivalent numbers which I employ are, carbon 6.12, hydrogen 1.0, oxygen 8.0, and nitrogen 14.0. That we may the more readily apply the proportionate quantity of nitrogen to our immediate purpose, I shall make one column in each analysis, which will represent

by weight the quantity of nitrogen when compared with 1000 parts of carbon in the same compound. I also designate by the term *residual* those earthy and saline ingredients which are not decomposed during the analysis. In some of the experiments this residual may contain a little *foreign matter*, for in preparing the different compounds for analysis I seldom had recourse to any process of ablation, rather choosing to have a little foreign matter present, than to remove any part of that which was more particularly the object of research. That I might also examine the compounds as nearly as possible in their natural state, I very rarely exposed them to a higher temperature than 100° Fahr., inclosing them in very thin paper, and afterwards allowing them to acquire the hygro-metric state of the atmosphere.

The first series of experiments to which I shall refer tends to show, that in that part of the seed where germination takes place nitrogen preponderates, when compared with its quantity in the other part of the seed. This result is derived from the analysis of the germ and cotyledons of beans, peas, barley, wheat, &c., a large excess of nitrogen being invariably indicated in the germ.

TABLE I.

	Carb.	Hydr.	Oxyg.	Nitr.	Resid.	Water.	Total.	Nitr. for 1000 Carb.
Germ of the garden bean.....	42.68	1.19	..	8.53	1.80	45.8 =	100	200
Cotyledons of the garden bean	39.27	..	2.66	5.65	2.40	50.02	100	140
Germ of early garden peas.....	41.9	0.2	..	8.3	0.8	48.8	100	198
Cotyledons of early garden peas.....	40.1	..	6.5	4.2	1.3	47.9	100	104
Germinating ends of barley.....	39.6	0.2	..	1.9	0.6	57.7	100	48
The other parts of barley.....	39.2	..	..	1.0	0.8	59.0	100	25
Germinating ends of wheat	41.2	0.9	..	2.1	0.7	55.1	100	51
The other parts of wheat	40.6	0.3	..	1.6	0.8	56.7	100	39

Thus, for instance, it appears from the table of analysis, that the germ of beans and peas contain by weight about 200 parts of nitrogen for 1000 parts of carbon, while the cotyledons contain only from about 100 to 140 parts.

A second series of experiments disposes me to think, that those *seeds of the same kind* which contain the largest quantity of nitrogen germinate the earliest. Barley of the growth of 1835, containing 46 parts of nitrogen for 1000 of carbon, germinated in thirty-six hours after being taken out

of the water in which it had been steeped; whereas barley of 1837, and containing only 35 parts of nitrogen, steeped in water at the same time, and kept under the same circumstances as the former, germinated in forty-eight hours. Similarly, I find that of the seeds, mustard, cress, rape, turnip, radish, and celery, those which contain the largest quantity of nitrogen and residual, germinate the earliest when kept under equal circumstances. It is necessary to state that in these analyses the seeds were examined in the mass.

TABLE II.

	Carb.	Hydr.	Oxyg.	Nitr.	Resid.	Water.	Total.	Nitr. for 1000 Carb.
Barley of 1835	43.93	0.71	..	2.02	1.30	52.04 =	100	46
Barley of 1837	39.57	..	3.45	1.38	1.30	54.30	100	35
Mustard seed	50.74	2.36	..	3.55	3.90	39.45	100	70
Cress seed	46.8	1.5	..	3.3	4.8	43.6	100	71
Rape seed	55.3	3.4	..	2.7	3.1	35.5	100	50
Turnip seed.....	55.4	3.5	..	3.6	3.1	34.4	100	65
Radish	55.34	3.48	..	5.03	3.4	32.75	100	90
Celery	50.39	2.35	..	2.37	6.6	38.29	100	47

The chemical constitution of the *rootlets of seeds* before the *plumula* extends the whole length of the seeds, as in the instance of malted barley,

differs from that of the malt, and also from the constitution of the barley in its original state. In these we have the rootlets containing a large

quantity of nitrogen at a period when they will have to perform important offices in preparing the food for the young plant. That there is a similar difference between the chemical constitution of the roots and trunks of trees will abundantly appear

from the annexed table. And I may also add, that my experiments dispose me to infer that the quantity of nitrogen is largest in the spring, and diminishes with the season.

TABLE III.

	Carb.	Hydr.	Oxyg.	Nitr.	Resid.	Water.	Total.	Nitr. for 1000 Carb.
Barley in its original state.....	39.6	..	3.5	1.3	1.3	54.3	= 100	32
The malt made from the same	41.7	..	1.8	2.1	1.4	53.0	100	50
The rootlets of the malted barley....	40.5	0.4	..	4.3	3.5	51.3	100	106
Root of an apple-tree with the bark..	41.6	..	3.7	.7	1.2	52.8	100	16
Trunk of an apple-tree without the bark	42.8	..	4.8	.3	.3	51.8	100	7
Root of a plum-tree with the bark...	42.4	0.4	..	.8	1.6	54.8	100	18
Trunk of the same without the bark...	42.8	..	..	.4	0.6	56.2	100	9
Root of cherry-tree with the bark...	45.5	0.2	..	1.1	.8	52.4	100	18
Trunk of cherry-tree without the bark	43.9	..	4.3	.6	.2	51.0	100	10
Ash in a very dry state without the bark	46.6	..	..	0.5	.8	52.1	100	11
Ash root without the bark	35.2	0.8	..	2.6	9.4	52.0	100	74

Note.—The apple, plum, and cherry trees were all of them very small; they had been in the ground several years, and had been rooted up because of their general unhealthiness. In a healthy state of the trees the nitrogen of the root is in a larger proportion.

But not only is the nitrogen more abundant in the roots of plants and trees; the residual also, when compared with the quantity in the trunks, will be found in excess in the roots.

Now if we admit the principle, that nitrogen is a powerful agent in favouring chemical action upon vegetable and animal matter, and that this residual is essential to the healthy performance of every function of the roots, as well as every other part of the plant, and forms, as it were, a most perfect skeleton of the whole; we have in these roots that which will favour such action in an eminent degree when compared with the other part of the tree.

It would be leading us into other subjects more extensive than the one now before us, if I were to go into, or treat upon, the chemical action which takes place by the agency of the roots, the compounds formed thereby, the heat produced by such action, the arrangement of the residual, &c. It will be sufficient, that in following up this part of the inquiry, we state as the result of experiment, that the *sap wood* is very differently constituted from the more perfect part, the *heart wood*, an excess of nitrogen being invariably found in the former.

TABLE IV.

	Carb.	Hydr.	Oxyg.	Nitr.	Resid.	Water.	Total.	Nitr. for 1000 Carb.
Young English oak sap wood	42.40	.18	..	.55	1.6	55.27	= 100	13
Heart wood of ditto	42.40	..	..	.16	0.7	56.74	100	4
Quebec oak sap wood.....	44.2	.14	..	.31	1.3	54.05	100	7
Heart wood of ditto	44.59	..	..	.13	0.6	54.68	100	3
English elm sap wood	41.20	.40	..	1.6	2.5	54.3	100	39
Heart wood of ditto	41.1	..	..	0.7	1.7	56.5	100	17
Acacia sap wood	43.79	..	2.49	.55	.50	52.67	100	13
Heart wood of ditto	41.36	..	6.67	.50	.20	51.27	100	12
Cedar from Africa sap wood.....	42.06	.42	..	.39	2.8	54.33	100	10
Heart wood of ditto	39.92	..	..	.36	0.7	59.02	100	9
Chestnut sap wood.....	41.16	..	1.86	.38	.10	56.20	100	9
Heart wood of ditto	40.18	..	7.96	.29	.20	51.37	100	7

It will be unnecessary for me to say that the sap wood more readily passes into a state of decay than the heart wood. Here again the nitrogen and the residual being present in larger quantities in the former than in the latter, we have them exerting their influence as promoters of decomposition.

We have also the greatest quantities of nitrogen

and residual in those timbers which grow the quickest: and further than this; for directly as the quantity of nitrogen and residual taken collectively so do we appear to have the decay of timber, all other circumstances being equal. The following is the analysis of several kinds of timber which favour this inference.

TABLE V.

	Carb.	Hydr.	Oxyg.	Nitr.	Resid.	Water.	Total.	Nitr. for 1000 Carb.
Satin wood	47.20	..	..	.04	.50	52.26 =	100	1
Dantzic oak	44.90	..	..	.11	.50	54.49	100	2
English oak	43.20	..	..	.20	.60	56.00	100	4
Malabar teak	46.82	.18	..	.26	.18	52.26	100	5
Rangoon teak	47.93	.34	..	.13	.22	51.08	100	9
Spanish mahogany, fine-grained	49.0	..	..	.10	.50	50.4	100	2
Honduras mahogany, coarse-grained .	40.97	..	..	.90	1.50	56.63	100	23
Lignum vitæ	51.22	1.21	..	.56	.60	46.41	100	11
Box	46.4	.50	..	.50	.80	51.80	100	11
Rose wood	51.1	..	..	.60	2.50	45.3	100	12
Black ebony	42.4	..	..	1.50	5.0	51.1	100	35
American birch	45.0	..	..	2.2	2.5	51.3	100	40

Thus, for instance, the nitrogen in the satin wood may be considered almost inappreciable; and the same may be said of the residual in the Malabar teak, the nitrogen being also small in this timber. In Dantzic and English oak the quantity of nitrogen and residual are both very small. In American birch the nitrogen and residual are in large quantities, and, as is well known, this timber decays very quickly.

But it is not enough for us to find a difference in the proportionate quantity of nitrogen in the different parts of the same plant or tree; we must also observe that the quantity appears to be proportional to the functions which the parts of the plants have to perform in vegetation. For instance, if the agency of any part of the plant be great in the scale of vegetable physiology, so is the quantity of nitrogen, and vice versa. So ap-

parent is this, and so universal is the operation of this law over the whole sphere of inquiry in which I have been engaged, that we might almost consider this element, when coupled with the residual, to be the moving agent, acting under the influence of the living principle of the plant, and moulding into shape the other elements. We have this beautifully instanced in the chemical constitution of the different parts of wheat, barley, oats, common grass, turnips, cabbages, carrots, potatoes, &c., found by subjecting their various parts to analysis *at different periods of their growth*. (See Table VI.) For by thus subjecting the different parts of the same plant to analysis at different periods of growth, we acquire much valuable information upon vegetation generally, and respecting the influence of nitrogen and residual in particular.

TABLE VI.

	Carbon	Hydr.	Oxyg.	Nitr.	Resid.	Water.	Total.	Nitr. for 1000 Carb.
Flour of wheat not nearly ripe	41.2	1.8	..	2.9	2.0	52.1 =	100	70
Flour of the same kind nearly ripe ..	40.6	0.5	..	2.3	1.0	55.6	100	57
Leaves of the wheat not nearly ripe ..	37.6	..	8.1	3.3	4.2	46.8	100	87
Leaves of the same when nearly ripe ..	38.4	..	..	2.1	4.6	54.9	100	55
Stems of the wheat not nearly ripe ..	39.8	0.8	..	3.5	4.0	51.9	100	87
Stems of the same when nearly ripe ..	38.8	..	..	1.3	4.0	55.9	100	33
Chaff of wheat not nearly ripe	35.5	..	7.3	1.8	10.8	44.6	100	50
Chaff of the same when nearly ripe ..	31.2	..	1.7	1.3	11.0	54.8	100	42
Common grass not growing freely ..	41.1	..	3.1	4.4	5.5	45.9	100	107
Common grass gathered at the same time growing very freely	39.5	1.6	..	5.6	6.5	46.8	100	141
Turnip when attacked by the fly	35.5	..	..	8.0	13.4	43.1	100	224
Cabbage leaf not eaten	39.5	..	4.8	8.1	5.9	41.7	100	203
The part eaten by insects	39.7	..	13.8	5.7	8.0	32.8	100	143
The insects themselves	36.0	1.3	..	6.3	14.0	42.4	100	175
Green part of another cabbage leaf ..	39.9	..	3.8	6.5	4.7	45.1	100	162
White part of the same	39.2	0.8	..	8.0	4.9	47.1	100	205
Tendrils of the same	38.8	2.7	..	5.4	6.3	46.8	100	138
Very centre part of the cabbage	33.0	1.7	..	4.1	4.0	57.2	100	124
Root of the same plant	39.2	1.4	..	5.5	4.5	49.4	100	141
Red clover stems	29.6	0.4	..	2.5	9.8	57.7	100	83
Leaf	28.6	..	7.7	4.2	5.0	54.5	100	145
Flower	30.4	..	10.2	3.6	5.0	50.8	100	119
Potato itself	37.1	1.4	..	2.9	3.4	55.2	100	79
Stem of the same	25.3	..	18.1	3.1	15.0	38.5	100	123
Leaves of the same	39.8	0.5	..	8.5	9.4	41.8	100	214
Apple of the same	32.9	..	16.4	3.9	5.6	41.2	100	117
Corolla of the same	38.8	..	8.5	3.3	4.4	45.0	100	85
Pistils of the same	36.2	2.2	..	4.6	9.6	47.4	100	129
Young carrot, 1/4 of an inch in diameter	33.1	1.5	..	2.9	8.5	54.0	100	88
Leaves of the same	30.4	0.8	..	2.7	10.0	56.1	100	90
Stems of the same	28.7	..	2.8	1.7	11.2	55.6	100	59

There appear indeed to be various chemical actions taking place in which these two elements are eminently concerned, viz., in the preparation of the food of the plants by the roots, and in combining this food with the other elements and fitting the whole to the various purposes of the plants.

Throughout the whole course of my experimental inquiry, I have not met with one instance wherein we have a large proportion of nitrogen and residual, that we have not violent chemical action and quick growth of the plants, all other circumstances being favourable.

By analysing the leaves of trees we may throw further light upon the operation of nitrogen. Of the almost numberless vegetables which cover the face of the earth, there are very few, if any, whose growth and produce afford us more information upon the chemical changes which occur during the growth of plants and the decomposition of vegetable matter than the vine. Its abundant flow of sap in the spring yields us a most important product for determining its food. Its foliage furnishes us with a plentiful supply of leaves for examination at different seasons : and by allowing these leaves sometimes to remain on the trees until they are very abundant, and then removing a considerable portion thereof, leaving the rest to grow, we have at intervals of very few days

an opportunity of chemically examining this very important and indispensable part of vegetable production under very different circumstances. By carefully dissecting these leaves, we are enabled to discover by analysis important changes produced in very few hours. From the proneness on the part of these leaves to pass into decomposition, at favourable temperatures, we have a feature brought before us which claims our best attention. And we have the fruit of this plant affording us, in its conversion into wine and other substances, an opportunity of examining into many important chemical changes, and I may add, of making the accuracy of many popular theories more than questionable.

The vines which more generally afforded me materials for examination are those which produce the white and black sweet-water grapes. They are in the open air, and are nailed to the south side of a brick wall. A series of experiments upon the leaves of these vines are given in Table VII., shewing in a striking manner that nitrogen is in large quantities when they first make their appearance ; that as they are developed, it decreases in proportionate quantity ; that it is in excess during the period of their most rapid growth ; and that towards the close of the year it is comparatively small.

TABLE VII.

	Carbon	Hydr.	Oxyg.	Nitr.	Resid.	Water.	Total.	Nitr. for 1000 Carb.
The first small leaves on the white grape vine	37.7	0.5	..	5.1	9.5	47.2 = 100		134
Leaves from the same about a month afterwards	42.2	0.4	..	5.3	3.8	48.3	100	126
Leaves from the same in July	39.8	..	4.2	3.5	3.8	48.7	100	88
Leaves from the same in August	39.1	..	6.1	2.9	6.6	45.3	100	74
Leaves from the same in November..	41.9	..	..	2.3	9.2	46.6	100	55
The first leaves on the black grape vine	41.8	1.4	..	7.8	10.3	38.7	100	185
Leaves from the same in June	42.3	..	3.8	5.4	3.8	44.2	100	126
Leaves from the same in July	41.5	..	1.1	3.6	3.0	50.8	100	88

With a view of ascertaining whether or not these peculiarities in the chemical constitution of the leaves of plants and trees were universal, I have had recourse to extensive analyses thereof, gathering the

leaves from a great number of trees at different stages of their growth. The results hereby furnished may be obtained from the experiments in Table VIII.

TABLE VIII.

	Carbon	Hydr.	Oxyg.	Nitr.	Resid.	Water.	Total.	Nitr. for 1000 Carb.
First small leaves from the lime tree in May.	41.9	1.0	..	7.1	6.5	43.5 = 100		169
From the same in September 17	34.3	..	11.3	3.6	5.4	45.4	100	105
From the same in October 12	33.8	..	3.4	2.9	5.6	54.3	100	76
Acacia leaves, August 26, 1836	43.3	0.4	..	6.2	4.4	45.7	100	144
Acacia leaves, October 20, 1836	39.8	..	..	3.3	6.4	50.5	100	82
Almond leaves, August 26, 1836	37.5	..	11.7	4.4	3.8	42.6	100	118
Almond leaves, September 27	37.0	..	..	3.8	4.0	55.2	100	102
Plane tree leaves, Sept. 26, 1836	41.4	..	18.7	2.7	4.4	32.8	100	65
Plane tree leaves, October 26	45.3	..	..	2.4	3.8	48.5	100	53
Red currant, May 3	40.1	..	2.0	6.2	3.5	48.2	100	155
Red currant, August 25.....	44.6	..	..	5.7	3.6	46.1	100	129
Very young ivy	40.4	1.6	..	3.6	4.6	49.8	100	90
Full grown ivy	41.6	0.4	..	3.2	5.2	49.6	100	78
Decaying ivy	42.4	..	..	2.2	5.8	49.6	100	52
Oak leaves, July, 1836	40.8	0.6	..	4.3	3.9	50.4	100	104
Oak leaves, August	38.4	..	..	3.8	4.0	53.8	100	100

The analyses of the different parts of the flowers of plants are full of interest. The parts not only differ in chemical constitution with their state of development, as appears in Table IX., in the instance of the rose, where the full-blown petals contained twenty-four parts of nitrogen, and the unexpanded

and central petals contained sixty-six parts; but the various portions differ very materially from each other, and when taken in connexion with the germination of seeds, the growth of plants, their aliment, &c., throw much light upon the whole subject.

TABLE IX.

	Carbon	Hydr.	Oxyg.	Nitr.	Resid.	Water.	Total.	Nitr. for 1000 Carb.
Full blown rose petals	42.2	..	2.6	1.0	3.0	51.2	= 100	24
Rose petals not expanded, gathered at the same time, and from the same tree.....	45.2	1.1	..	3.0	2.5	48.2	100	66
Petals of the dahlia	35.5	..	10.2	2.7	4.0	47.6	100	77
Pistils of the same	34.8	1.3	..	4.2	4.3	55.4	100	120
Petals of the white lily	36.4	..	13.5	1.9	5.2	43.0	100	53
Pistils of the white lily	38.1	0.3	..	3.6	4.5	53.5	100	94
Pollen of the white lily	55.4	5.5	..	5.6	5.3	27.7	100	101
Stems of the anthers of white lily....	40.5	..	..	2.2	5.0	52.3	100	55
Chrysanthemum, expanded petals ..	39.2	..	..	2.1	3.7	55.0	100	54
Chrysanthemum, unexpanded	39.2	3.0	..	2.9	2.4	52.5	100	74
Pollen of the same	43.2	1.6	..	3.0	1.8	50.4	100	69
Leaves of the same.....	40.2	0.6	..	2.8	3.2	48.2	100	70
Leaves gathered June 16	41.4	..	4.1	5.0	4.2	45.3	100	121

Without adding to the number of experiments already furnished, I would observe, that I have not analysed any product in a natural state wherein I have not found both nitrogen and residual; and, of the great number that I have subjected to this process, those which are embodied in this paper may be considered as approximating to an average of the whole, as regards both this gaseous element and the incombustible matter.

In conclusion, I would observe that the mode of analysis which I have adopted in the examination of organic compounds, so far as determining the quantity of carbon, hydrogen, oxygen, and residual are concerned, is the one described in the paper on vegetable decomposition to which I have already referred. Respecting the mode of determining the quantity of nitrogen, a very brief account of the plan which I have adopted is given in the *Philosophical Magazine* for January last; and by combining these two methods of ultimate analysis, I am enabled, in capitulation, to detect very minute errors, and therefore to speak with certainty as to the accuracy and value of every experiment.—*From the Philosophical Transactions.*

ON THE EVOLUTION OF NITROGEN DURING THE GROWTH OF PLANTS, AND THE SOURCES FROM WHENCE THEY DERIVE THAT ELEMENT.

BY ROBERT RIGG.

In this communication I shall have the honour of submitting to the Royal Society a series of experiments, which not only confirm the principles I have already laid down in the investigations of the influence of nitrogen on the growth of plants, but also enable us to trace this important element to its source.

By what mysterious process of natural chemistry the living principle of the plant obtains this pro-

duct, we must be content to remain ignorant; but to what extent a supply can be procured from the compounds upon which its agency is directed, is within the compass of legitimate experimental research.

With respect to the entire volume of nitrogen connected with the process of vegetation, it will be observed that my former tables show that the quantity appropriated by the plant varies from $\frac{1}{1000}$ to $\frac{1}{5}$ of their weight of carbon; and the important experiments of Dr. Daubeny, Saussure, Sir Humphry Davy, and others, have abundantly established the fact that there is a considerable evolution of nitrogen during the growth of plants. Experiments, however, upon the quantity of nitrogen evolved are so beset with difficulties, that our best efforts in this department of vegetable physiology have not enabled us to speak with certainty as to the absolute or relative quantities of the gases which are given off during the healthy action of the functions of vegetable life. And in corroboration of this remark it is only necessary to state, that the natural course of vegetation is unavoidably interrupted, by the necessity we are under of excluding plants from the free action of the external atmosphere, when we attempt to collect the gases they give off.

Sir Humphry Davy made his experiments under as favourable circumstances as the nature of the case will admit of; and he found that when the oxygen decreased in quantity about two per cent., the nitrogen increased four per cent., and that when the oxygen increased about thirty-five per cent., the nitrogen increased about seven per cent. Some of my own experiments have been conducted on the principle adopted by Sir Humphry Davy. I have also introduced whole branches of trees, as well as stems and leaves of more tender plants, under water, without removing them from the parent stock, and collected their gaseous products in inverted glass vessels. Upon examining these products, I find, that the gaseous volumes are perceptibly affected by the brightness of the sun's

rays, though their variation appears to be subject to no fixed law. At the same time, however, it is certain that nitrogen, whether appropriated or evolved, is apparently the most uniform, while oxygen assumes the character of a most fluctuating and passive agent.

Hence, then, if plants, taken as a whole, contain from three to four per cent. of their weight of nitrogen, and if to this we add the indefinite quantity, so far as we can comprehend, which is evolved during their growth, the question naturally arises, from whence do plants draw this part of their substance, as well as the volume of nitrogen which they furnish to the atmosphere? a question of the greatest importance in the practical application of the subject, and one not wanting in interest as a part of the inquiry into the chemical changes which occur during the growth of plants.

The quantity of animal and vegetable matter which forms a part of all soils suitable for the growth of plants, invariably containing nitrogen, furnishes us at once with one source from whence they may derive a part, if not the whole, of this element, which is either found in their constitution, or given off to the atmosphere during their growth. Hence an accurate examination of these soils at different periods might enable us to determine the question as to whether or not the earth supplied the whole of the nitrogen which is employed in vegetable economy. But from the many difficulties consequent upon accurately experimenting upon soils previous to and after the production of any plants, and also the examination of the plants so produced, we are not able by this mode of proceeding to obtain results in any degree satisfactory.

In order to free myself from all doubt upon this point, and to ascertain whether *the atmosphere* did or did not furnish any part, and if any what proportion, of the nitrogen which enters into the constitution of plants, I had recourse to the ultimate analysis of seeds and young seedling plants.

Some seeds I steeped in distilled water, and some in filtered Thames river water. When they had absorbed a sufficient quantity of water to favour the first impulse of germination, I spread them on glass or china plates, and kept them at temperatures favourable to germination and vegetation, in a room where the only source of nitrogen would be that which was supplied by the seed and the atmosphere. The quantity of dry seed experimented upon varied from thirty to one thousand grains, which were accurately weighed. These I allowed to germinate and grow, keeping them regularly supplied with the respective kinds of water only; and that nothing might be lost by the water carrying off any of the soluble parts of the different seeds, that water which was employed in steeping each kind of seed at the commencement was afterwards used in watering the same.

Some of the experiments I favoured so as to have them germinating and growing quickly, and others slowly. Some of them were terminated at one stage of their growth, and some at another; and some of them were allowed to vegetate as long as the seeds appeared to afford them nourishment. At the end of each experiment the whole mass was enveloped in very thin paper, and dried at a temperature varying from 100° to 110° Fahr., powdered, and afterwards allowed to acquire the hygrometric state of the atmosphere. They were accurately weighed in this condition, a portion of each part, or of the entire mass, subjected to ultimate analysis, and calculation made for the whole.

Thus I was enabled to discover an increase or decrease of any of the elements in any experiment so conducted, wherein the seed itself, the water, and the atmosphere furnished whatever was required for vegetation.

We are led by these experiments to the inference, that, independent of that indefinite quantity of nitrogen which is given off to the atmosphere during vegetation, there is an increase of this element in plants when compared with its quantity in the seeds; and in this case the seeds form the only source from whence they could derive it, with the exception of the atmosphere and any little which might have combined with the water used on the occasion.

It would be at variance with my mode of research, which is purely experimental, to make any observations upon the quantity of nitrogen which is probably furnished by the atmosphere during the germination of seeds and the full growth and development of plants. The experiments before us dispose us to infer that it differs with the temperature at which the plants are exposed, and with exposure as regards sunshine and the shade. Thus we have in the germination and vegetation of barley, for instance, the quantity of nitrogen in the grain germinated under very favourable circumstances for the process, increasing to an extent equal to thirty-eight per cent. upon the original quantity contained in the seed; when the same kind of barley was kept under unfavourable circumstances for vegetation, and allowed to grow until the principal part of the farina was exhausted, the increase in the quantity of nitrogen was only eighteen per cent. When the same grain was allowed to vegetate in the sun's rays until about two-thirds of the flour contained in the seed had disappeared, the increase in the quantity of nitrogen was thirty per cent.; and when the same plants were kept under the most favourable circumstances, and allowed to vegetate until the seeds appeared to be exhausted, the young plant during this time having the most healthy appearance, there was an increase upon the quantity of nitrogen contained in the seeds of *nearly fifty per cent.*

Seeds of cress during vegetation increased their quantity of nitrogen forty-one per cent. when the plants were kept under a temperature varying with shade and sunshine from 60° to 84°. The experiments upon the seeds of the turnip, an important plant in an agricultural point of view (about one-half of which germinated), shows that the nitrogen which was derived from the atmosphere was more than that which was contained in the seed. In all these experiments we have the quickness of the growth of the young plants proportional to the quantity of nitrogen present when compared with 1000 parts of carbon in the same.

With these facts before us, we are enabled to account for plants not continuing to grow so well in pure oxygen gas as in atmospheric air; and by following up the inquiry in other departments, we see the wisdom of the all-wise Contriver in constituting an atmosphere with a decided preponderance of nitrogen and a much smaller proportion of oxygen.

Finding that plants under different circumstances of growth differ in the relative quantity of nitrogen which they contain, as well as in the other elements which enter into their constitution, I was desirous of obtaining information which would lead us to account for the well-known fact of plants increasing most in size during cloudy

weather, and of grasses, for instance, which are shaded (as under hedges), increasing much in straw, but producing seed both small in quantity and inferior in quality.

By way of commencement in this part of the research, I made duplicate experiments with the same kind of seeds, steeped them in and supplied them with the same kind of water, and kept them under equal circumstances in every respect, except that of placing one of each in the sun's rays in the greenhouse, where the sun shone till three P.M., and the other in the same situation, excluded however from the sun's rays, but not from the light. Those in the shade increased in length much more than the others, were a little lighter in colour, and when weighed before they were exposed to the drying temperature, were also heavier, but when dried at 100° to 111° were considerably less in weight. The result of the experiments as regards nitrogen is, that those plants which weighed the heaviest before drying, and which had as it were moulded into shape the largest quantity of matter in the form of plants, contained, in the cress for instance, 147 parts of nitrogen for every 1000 parts of carbon; whereas those plants from seed of the same kind which grew in the sun's rays, and whose weight before drying and when freed from foreign water was nine per cent. lighter than the other, contained only 111 parts of nitrogen for 1000 of carbon;—and in addition I might make an observation which is in perfect harmony with all that has been noticed upon the influence of nitrogen on the growth of plants, viz., that whereas the cress arrived at its state of maturity, so far as the seed could furnish it with nourishment, in eighteen days, the rape had not exhausted all its seed in twenty-six days; and the proportionate quantity of nitrogen in those plants was, in cress in the sun's rays 111, in rape in the same situation 73; and in cress in the shade 147, and in rape 82, when compared with 1000 parts by weight of carbon in each.

In concluding this subject, upon which I have been as brief as its nature would admit of, not even entering at all upon the practical application thereof, the point of view wherein its real value consists, I beg to observe that, although nitrogen appears from these experiments to be a very powerful agent in the economy of plants, it is far from my intention to give it any undue importance. It is my object to draw attention to an element which, comparatively speaking, has escaped unnoticed, and to vindicate the necessity of a most scrupulous attention to those products which, though so minute in quantity as to be with difficulty detected in our balances, have nevertheless been wisely assigned to discharge the most important functions.—*From the Philosophical Transactions.*

AN ACCOUNT OF AN EXPERIMENT ON THE RELATIVE VALUES OF SEVERAL VARIETIES OF WHEAT.

BY JOHN MORTON, ESQ., OF CHESTER HILL,
NEAR STROUD.

The profits of farming, whether the land be pasture or arable, and the tenant be a feeder of stock or a tiller of the ground, may be increased in two ways.

The stock-farmer knows very well that the return he

obtains from his cattle depends, not only on the kind of food given to them, and the manner in which it is supplied, but also on the feeding qualities of the breed to which they belong; and he increases his chance of profit as much when, on purchasing from the breeder, he selects with judgment, as when he adopts an improved mode of feeding.

The intelligent farmer of arable land, again, expects a greater crop, the more he has been able to improve the texture of the soil, and the better the nature and state of the manure which it contains. He expects it, because he knows that it depends on the nature of the food given to the plants, and the manner in which they are provided with a constant supply of it. The crop does not, however, depend only on this: for as two beasts fed in exactly the same manner may not be equally profitable, owing to a difference between them regarding the quantity and quality of the meat they afford, so two different kinds of wheat, though sown on land precisely similar, and in equally good condition, may give unequal returns, owing to a difference between them regarding the quantity and quality of the flour they afford.

Hence the importance, too often overlooked by farmers, not only of preparing the land for the crop in a good and sufficient manner, but also of selecting that kind of seed which experience has pointed out as being most valuable and productive.

It was with a view, not only of ascertaining the relative value, hardness, and other properties of several of the most commonly-planted wheats, but also of effecting an improvement in the best of them, that the following experiment was commenced on the 1st of November, 1837. To insure accuracy in the results, it was necessary that the seeds of each variety should be planted so as to have them all at equal distances. To effect this, two boards were used, each six inches wide, nine feet long, and half an inch thick. Along the centre of each board was a row of holes, three inches apart and one inch in diameter. A dibble was made to fit into the holes, having a shoulder at the distance of $2\frac{1}{2}$ inches from the point.

When the board was placed on the ground, and the dibble put through each hole in succession, a series of holes was thus made, two inches deep, and three inches apart from centre to centre.

After this had been done through the first board, the second, which was touching it, and parallel to it, was served in the same way; and then the first was taken up, and placed on the other side of the second. By proceeding thus, the whole ground was finished, and then one grain of wheat was dropped into each hole. The rows were thus exactly six inches apart, and the grains in the rows were three inches from one another. The regularity with which the planting was performed was thus mathematically accurate. The ground planted lies on the lower edge of the great oolite formation, and the soil is a stone brash, about ten inches in thickness. Crops of potatoes had been taken off it for a succession of eight years; and it had been manured every alternate year, with a compost of equal bulks of stable-dung and earth, at the rate of about 20 cubic yards per acre. It was 67 feet in length; and three rows of each variety of wheat were planted, except the first and last numbers, of which there were four rows. The outer row of each of these, however, was not taken into account, because their roots had a much greater extent of ground for their growth than the others, whose roots touched one another all round. The end plants of each row were also rejected for the same reason. Sixty-six feet in length of ground were thus taken up, and three rows of each variety occupied in width $1\frac{1}{2}$ foot: the ground occupied by each variety was thus 99 square feet, the 440th part of an acre.

When planted.	No.	Name of Wheat	Whence obtained.	No. of seeds planted.	Loss of seeds from birds, frost, &c.	Produce of 99 square feet.		No. of ears in one square foot.	Average No. of heads per root.	Weight of grain produced from 99 square feet.	Weight of wheat per acre.	No. of bushels per acre, at 64 lbs. per bushel.	Length of straw.	Weight of straw produced from 99 square feet.	Weight of straw per acre.	Weight of roots with 2 in. of stem.	Weight of roots per acre.
						Plants or roots.	Heads of grain.										
Nov. 15	1	Old red Lammas	Pusey, Berks.....	792	387	405	2463	25	6	lbs. 6	1 3	413	ft. 5	lbs. 16	3 5	lbs. 5	0 19
..	2	Golden drop	..	792	291	501	2542	25	5	63	1 6	463	5 8	15	3 0	54	1 0
..	3	Ten rowed prolific	Hareby, Lincolnsh.	792	391	401	1935	19	32	43	0 16	27	5 5	12	3 10	5	0 19
..	4	Hunter's	Leek, Lincolnshire	792	273	519	2028	20	4	43	0 16	27	5 6	12	2 12	5	0 19
..	5	Thick-set Suffolk	Lyford, Berks	792	120	672	3039	30	4	103	1 1	724	5 8	19	3 5	74	1 9
..	6	Hickley's prolific	Old Buckingham,	792	132	657	2886	29	4	103	1 19	694	5 7	16	3 5	63	1 6
16	7	White Taunton	Norfolk	792	305	487	2695	27	5	6	3	413	5 6	15	0	54	1 1
..	8	Silver drop	Wallingford, Berks	792	218	674	2582	26	4	8	11	55	5 6	18	0	6	1 3
..	9	Scotch white	Lyford, Berks	792	379	413	2386	24	5	61	1 4	43	5 9	16	3 12	51	1 1
..	10	Talavera	..	792	434	358	1985	20	5	54	0	36	5 8	14	3 16	54	1 1
21	11	{ Smithers' Hereford }	Taunton	792	319	473	2529	25	5	92	1 17	652	5 6	17	3 8	5	0 19
..	12	A red wheat	Cirencester (Smith)	792	252	540	3453	35	62	12	2	82	5 0	22	4 7	9	1 15
..	13	Egyptian Cone	..	792	528	264	711	7	23	38	5	23	5 0	8	1 11	3	0 11
..	14	Red straw Lammas	..	792	510	282	2096	21	73	43	0 13	27	5 8	14	1 16	3	0 11
..	15	Blue cone	..	792	264	528	1626	16	5	6	1	413	5 0	9	1 16	6	1 1
..	16	Red cone	..	792	456	336	2446	24	7	10	1 19	683	5 3	12	9	4	0 18
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

NOTE.—Specimens, in the straw, of each of the varieties mentioned in the Table were laid before the Society.

The above is a tabular account of this experiment. Although the tabular form in which this experiment is detailed explains itself by the headings of each column, yet it is considered necessary to give a somewhat fuller account of it. The seed from which the first ten varieties were raised was carefully selected

from specimens of each obtained in the ear. The others were from samples, and here, also, the greatest care was taken that the seed from which each was raised should be the best and plumpest that could be obtained.

The first five columns need no explanation beyond what is given at the head of each: the sixth shows the number of grains lost from casualties. If the frost had been the only agent in the destruction of so many of the seeds, this column might have been considered as a very accurate index of the relative hardness of each variety. This, however, is not the case, for the havoc which the birds made must also be taken into account. It was thought at the time that more injury was sustained, from the latter cause, by those varieties planted on the 21st, than by any of the others; but this does not appear to have been the case, for, if the great loss sustained by these had been wholly owing to the havoc committed by the birds, it is evident that the varieties marked Nos. 12 and 15 would not have been so slightly injured, while Nos. 11, 13, 14 and 16, suffered so severely. The figures in this column may, therefore, be said to indicate with tolerable accuracy the relative ability of each variety to withstand the effects of a severe and changeable winter, such as that during which the experiment was made.

The number of plants of each variety which came to perfection, is placed opposite the name of each in the seventh column. This was ascertained by pulling each as they respectively ripened, and counting the plants of each before proceeding to the others. In this way, by a simple subtraction, the numbers contained in the sixth column, also, were ascertained.

When all the plants of any variety had been pulled, the number of ears, also, belonging to them was counted, and the results are placed in the eighth column.

By dividing these by 99, the number of square feet which each variety occupied, we obtain the number of ears in each square foot; and this is placed opposite the name of each wheat, in the ninth column.

The average number of ears to each root, ascertained by dividing the number of ears by that of the roots, is placed in the tenth column. This column shows the degree in which each species possesses the important property of spreading and shooting out stems, or, as it is technically termed, of *tillering*; and it will be seen that they vary in this respect greatly.

After having been pulled and dried, the wheat was carefully rubbed out; and after the light and imperfect grains had been separated, the weight of the remainder was taken, and placed opposite each sort, in the eleventh column.

The thirteenth column contains the number of bushels per acre raised from each variety. As the quantity produced was so small, there was some difficulty in obtaining the particulars which this column contains.

The mode adopted was this. The average weight of several of the varieties was ascertained by weighing eight pints of each, to be at the rate of 64 lbs. per bushel, some being rather more, and others less. The number of bushels were then obtained from the weight of wheat per acre, by dividing it by 64.

The weight of straw, which is placed in the fifteenth and sixteenth columns was ascertained after the roots had been cut off, and after it had remained out sufficiently long to dry it perfectly.

After the earth had been removed from the roots, which had been cut off with about two inches of the stem, they were weighed, and the result placed in the seventeenth and eighteenth columns. The object of this was to ascertain the amount of vegetable matter left in the soil after the wheat crop has been removed, and the result greatly exceeds any conception of it that had been previously entertained.

The inferences which, it is presumed, may be drawn from the above details, are the following:—

1st. With regard to the hardness of the varieties, which, as we have already said, may, to a certain extent, be deduced from the particulars contained in the sixth column, that they may be placed in three classes. Nos. 5, 6, 8, 12, 15, 4, and 2, being the hardest; Nos.

13, 14, 16, and 10, being the most delicate; and Nos. 1, 3, 7, 9, and 11, occupying an average station.

2nd. With regard to the property of *tillering*, of which we have already spoken, that Nos. 12, 14, 16, and 1, possess it in the greatest degree; that Nos. 3, 13, 4, 5, 6, 15, 8, and 2, possess it in the least; and that Nos. 7, 9, 10, and 11, hold a medium rank.

3rd. That with respect to the relative value of each variety mentioned in the table, No. 12 is undoubtedly the best of any, in productiveness, and in being sufficiently hardy; that No. 13 is as undoubtedly the worst of any, as will be seen by a reference to any of the columns; and that the others vary greatly, some possessing nearly three times the productiveness of others.

These 16 different sorts of wheat, with the exception of Nos. 13, 15, 16, which are bearded, are merely varieties of one species of the genus *Triticum*; and the circumstance of differences existing among them, some possessing three times the value of others, shows that any variety is capable of improvement. This, indeed, is shown by many other plants besides the wheat. The originals of the potato, the carrot, and the turnip, were comparatively insignificant and useless in their application as food, and it was only by careful and repeated cultivation that they were at length brought to their present condition, and made to hold such an important rank among the many nutritive plants cultivated for the food of man and beast. It is supposed then, and where it has been tried experience shows it to be a fact, that, by first ascertaining the best of many varieties of wheat, and planting the finest and plumpest seeds selected from the best sample that could be obtained of it, the last of a succession of crops, the first of which was raised in this manner, and all the others from seeds selected out of the produce of the preceding harvest, would, at length, afford a wheat of a more productive and valuable kind than has hitherto been used by the farmer. The experiment here detailed is, then, merely the *first step* in the process—it merely points out the best of the varieties which were tried. The improvement of these by repeated cultivations still remains to be effected.

During the growth of the wheat, a journal was kept, an extract from which is given here, as it refers to an insect which was observed after the blossoming of the plants, and to which the destruction of many of the seeds was owing.

Observations of this kind might be easily and generally made, and they would be useful as information regarding the nature and habits of the insects which attack wheat; and answers to the how? when? and where? on the subject, which would thus be obtained, afford the only guide to the invention of means for their destruction.

1838.

EXTRACT FROM JOURNAL.

July 5th.—All the wheat is in blossom, except Nos. 13 and 15.

14th.—Very rainy and windy weather. Whether will this be found to injure or improve the quality of the grain?

16th.—Since the rain of the 14th, an orange-coloured substance, like rust, has been observed in the seed-vessels of some of the ears, as if the rain had got in and rotted the pollen. A very small fly has been observed about the ears in the evening. Many of the ears are filling rapidly, some are already full, and others are only in blossom.

19th.—In the ears of wheat, which were before-mentioned as having abortive grains, owing, as was thought, to the pollen having been rotted by the rain, I now find small orange-coloured grubs, about the tenth of an inch long, doubtless the offspring of the small fly observed about a week ago.

Aug. 4th.—All these grubs have disappeared.

27th.—Nos. 4, 10, and 11, are ripe and pulled.

28th.—Nos. 3, 5, and 6, are ripe and pulled.

29th.—Nos. 7, 8, and 9, are ripe and pulled.

30th.—Nos. 2, 12, and 16, are ripe and pulled.

Sept. 1st.—Nos. 1 and 14 are ripe and pulled.

2nd.—Nos. 13 and 15 are ripe and pulled.

The account of this experiment is thus finished, and there now remains but to state what will have occurred to the reader, especially if he be a practical man, that it is not one nor many experiments, if conducted on a small scale, which will accurately determine the point this tends to ascertain.

The farmer himself must first be convinced of its importance, and the observations and experiments on this subject, which, if he be actuated by no higher motive, self-interest will then urge him to prosecute with diligence, will ultimately, no doubt, be crowned with success.—*Journal of the English Agricultural Society.*

SPADE HUSBANDRY.—Spade husbandry bears a considerable resemblance to horticulture in its operation on the soil, which it comminutes and cleanses much more thoroughly than can be done by the plough and harrow. By turning up the ground, likewise, five or six inches deeper than the plough, which does not ordinarily act on more than three or four inches of soil, there is an opportunity afforded for the descent and diffusion of the roots, which are often interrupted in their progress by a hard and impervious substratum; and in this way augmented means are allowed for their acquiring nourishment, through their spongioles, from the soil beneath. With regard to wheat, I have had an opportunity of observing, that the number and length of the roots are much more considerable in forked than ploughed land. But there is another important benefit which this system is capable of producing. The whole efforts of cultivation seem, at present, exercised on three or four inches of ground at the surface; whereas, the constant elaboration of two or three times that quantity, its exposure to atmospheric influence, and the continual addition of decomposed vegetable matter afforded by a succession of rooty fibrils, must effect a great and permanent improvement in its character and productive power. It is from a proper appreciation of the importance of having more space for the expansion of roots, and a larger quantity of soil subjected to cultivation, that the distinguished subsoil plough of Mr. Smith has been invented; and that Sir Edward Stracey, of Rackheath Hall, in the county of Norfolk, has lately very successfully adapted a plough to deep ploughing. It may, perhaps, be thought, that to lay down the plough, and employ in its stead the spade or fork, is to reject an important mechanical improvement, and to take a step backward in human improvement. But it is not always that the highest power is the most convenient of application; and there are various examples in which the more simple description of labour may sometimes be advantageously substituted for the more complex. In agriculture, for example, the *dibbling of wheat* has very much superseded the broadcast and the drill in several counties, owing to the saving of seed, which nearly, if not wholly, pays the difference of expense in broadcast; and the greater precision and aptitude of the operation in both cases, by means of which the produce is rendered both more certain, and more considerable. The plough is indeed a clumsy and imperfect instrument, which the mechanical philosopher has hardly thought it worth his while to aim at improving. It is quite inadequate to preparing the ground for various vegetable productions. Effective planting, whether of vines, forest trees, or shrubs, requires the soil to be not only dug, but treched, in order to allow room for the roots to diffuse themselves in it. No gardener would think of planting potatoes, carrots or cabbages, in ploughed land, if he could get it dug; for the difference of produce far more than compensates the difference of the expense. But if this were even not the case in agriculture, and the expense of digging land were no more than made up by the augmented produce, still an important balance would remain in its favour, in providing employment for the poor, at all times when there is a redundancy of labour beyond the usual and ordinary demand for it.—*Dr. Yelloly.*

ON BREEDING SHEEP.

“For who is there almost that is ever brought fairly to examine his own principles and see whether they are such as will bear the trial? but yet this should be one of the first things every one should set about, and be scrupulous in, who would rightly conduct his understanding in the search of truth and knowledge.”—*Locke concerning Human Understanding.*

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—I beg leave to offer a few remarks on the breed of sheep. I am inclined to do so on reading Mr. Tanner's letter in your paper of the 20th inst.; that letter is confirmatory of many inquiries I have made respecting the cross breed, so ably advocated by Mr. Twynam. Mr. Twynam is a first rate farmer, and has land, as I am informed, far superior to much of the Hampshire land, and is thereby enabled to keep the sheep he so much wishes others to do, and which I am sure I would if they were likely to be more profitable than Southdowns, but I am at present satisfied that well bred Southdowns are better adapted to this county, both as respects breeding and fattening. My stock is rather higher bred than the generality of my neighbours, consequently somewhat in opposition to the Cotswold cross. I have endeavoured to divest myself of prejudice as to any particular breed, and have arrived at the conclusion, that well bred Southdowns are the most profitable for what are called “hill-country farms.” I shall shear this year upwards of 500, something more than my usual average. Being a very humble individual I shall not make known to the public who I am, as I am not disposed to embark in a newspaper controversy, my object being to communicate my ideas on a subject highly interesting to all breeders of sheep, and those that make them out.

I have the honour to be, Sir,

A MEMBER OF THE
ENGLISH AGRICULTURAL SOCIETY.

Hampshire, May 22, 1839.

THE LINDEN TREE.—Of every other tree connected with rural economy, perhaps the linden is the most valuable. In Russia, its properties are so well understood that we see it growing in every hamlet and village possessing a soil capable of nourishing it. The wood is not only manufactured into furniture, but into a variety of domestic utensils. Cords and matting are made from its inner rind, while its aromatic blossoms not only perfume the air and feed the bees, but make an agreeable tisane for the invalid. The Circassians feed their bees on the blossoms to produce the fine green honey, aromatic in odour and delicious in flavour, esteemed so great a delicacy by the rich gourmands of Constantinople and Teheran. In order to ensure its good qualities the honey is removed from the hive previously to the blossom changing its colour. The young and tender sprigs, with their foliage, serve to mix with the fodder during the depth of winter, being highly palatable to the cattle. I have already, in my previous works, more than once alluded to this very useful tree, with a desire to promote its cultivation in this country; for, independent of its utility, it is ornamental, and may be seen adorning nearly every public garden and promenade in Germany.—*Spencer's Travels in the Western Caucasus.*

TURNIP CULTURE.

Turnips are regarded by all farmers as the most complete fallow crop which can be grown, and are therefore generally introduced upon light soils into that part of every rotation which closes one course, and is intended to commence another. The land must, with this intention, be cleansed from every species of weed, without regard to labour, and should be heavily manured with dung, and also limed if necessary, as thereby affording the best chance of securing an abundant crop, and thus, through its consumption by the stock, still further increasing the fertility of the soil.

Upon the introduction of the turnip into our *field-system of cultivation*, the seed was of course sown broad-cast; but although that mode was universally abandoned throughout the northern counties upon the adoption of the drill, it has yet been very generally continued in the midland and southern districts. The reason assigned for this does not, however, arise from any general preference to the latter method in those places where it is followed, but is justified both upon the principle of its having been the immemorial habit in which the labourers are the most expert, and that the land is, in many widely extended tracts, so much encumbered with flints, as well as of such a compact and cloddy nature, as to prevent the due application of the drill and horse-hoeing implements. The latter fact of course opposes a decided objection to the practice, and the force of custom must be allowed to have its weight in other places; for, as to the performance of the work by hand-hoeing, the plants may be every where seen regularly hoed out to nearly equal distances with the greatest accuracy. Comparisons between the produce obtained from the two modes, indeed, often show them to be nearly alike; but the object in view is both to clean the ground, as well as to prepare a crop of winter food for cattle, and the true criterion for determining their merits, appears to us to depend upon the management of the land. On loamy soils, which admit the operation of the horse-hoe, drilling certainly affords the most effectual means of cleansing the ground; but on such land as that to which we have alluded, it has been abandoned after repeated trials by intelligent and unprejudiced practical men, and it may therefore be justly doubted, whether those great advantages which are in every case ascribed to the drill system would, in such instances, follow any alteration of the established plan.

Whichever system be adopted, the stubbles of the land intended for turnips should be ploughed to a good depth, immediately after harvest, or as soon as possible after wheat seeding is over. The upper drains and water-furrows should be drawn and opened as soon as the ploughing is finished, and the ground be laid dry, in as complete a manner as if it were under crop. Perhaps on soils of a strong nature, or exposed to lie wet during winter, no mode is more proper than those lands termed "ten-furrowed," or "five-bout ridges;" and if carefully laid up in this manner, the ground will have all the benefit of the frosts, which will tend to make it work kindly in the following spring; though on drier soils broader work may be used with safety. It may lie in this state until the close of the oat-seeding, when a second ploughing is given, usually in an opposite direction to the first; but if the weather prove dry, and the teams should be at leisure at any interval between those periods, another stirring may be given with

good effect. After these ploughings, the land should be repeatedly cross-harrowed with the heavy break and common harrow, and rolled, in order to free it from every species of rubbish, and to bring it into a complete state of pulverization; the root weeds should be carefully raked up, and either carried to the dung-hill, or burned upon the land, and nothing should be left undone to bring the ground into a state of perfect tilth,—that is to say, clean, dry, free from clods, finely reduced, and wearing the appearance, to both the eye and touch, of kindly mellowness. If the land be very clean, three earths may be sufficient to bring it into condition; but four are more frequent,—the second and third not quite so deep as the first and fourth,—and if foul, a fifth ploughing is sometimes necessary: after which the seed process usually commences.

In the application of Manure, if lime be used, it will of course have been mixed with soil during these operations; and if the land be sown broadcast, the dung must also be previously laid on. Many farmers, indeed, who adopt the drill, yet lay it on before giving the winter furrow, both from conceiving that the soil is thus more equally meliorated for the cultivation of the subsequent crops during the course, and from its also saving much time and trouble during the hurry of the turnip season; considerations which certainly merit attention, and which may not be found unadvisable where there is an abundance of manure. Most men have however to wait for its production in their yards during the winter; and, as the growth of a good crop of turnips is the main point in the commencement of the course, the most generally approved method of applying the muck is in drills, immediately before sowing, in the following manner.

The land, being levelled by the former ploughings, is divided into straight lined ridgelets, either by the operation of the double mould-board plough, or by that of the common swing plough: the most usual distance being twenty-seven inches; and a considerable advantage arises from preserving this distance, as it admits of the horse walking in the centre furrow whilst the wheels run in those on each side, consequently the land is not poached by putting on the manure, or in drawing off the turnips. However, much difference of opinion prevails, for many intelligent farmers use drills of only half that breadth; assigned as reasons—that although turnips grown in wider rows, reach to a larger size, yet the crops are not superior in weight; that they are more liable to injury from frosts; and likewise, after Christmas, less nutritive than those of moderate size.

Be this as it may, and still adverting to the wide drills generally adopted throughout the north, the manure is then carted on, and turned in, after the last ploughing; the quality being always duly fermented spit-dung of the richest kind, and the quantity as large as can be afforded,—say, from twelve to twenty tons per acre, according to the state of the land and species of turnips; Swedes requiring more than any other. The loaded dung cart goes between the rows, so that the wheels run in each of the furrows of the two adjoining drills on each side. The muck is then drawn out by the driver into small heaps at regular distances, and is followed by women and children who spread it with forks. It is thus laid into the hollow drills, and the ridgelets are then immediately split open by the passage of a plough through the centre of each; by which means the manure is

completely covered, and a bed is formed for the reception of the seed.

It should, however, be observed, that as the land for the grain crop, which follows turnips—whether barley, oats, or wheat—seldom gets more than one ploughing, it is customary to lay off the hills obliquely in a direction somewhat different from that in which the ridges are to be afterwards drawn for the corn; as thus a more equal distribution of the manure is secured to the soil, for the nourishment of the ensuing crops. Neither is the land always raised into small ridges for the reception of the dung; for the seed is frequently sown in drills drawn through the soil after it has been mixed with the manure, and laid quite flat. In thus stating the application of manure we have only adverted to the use of lime and dung, though ashes, rape-dust, oil, and sea-weed, together with many other kinds, both natural and composite, are frequently employed, and latterly bone-dust has come into such general favour for the cultivation of turnips, as nearly to supersede every purchased species of a putrescent nature.

The next operation is that of sowing the seed.—This ought to be done as soon as possible, while the earth is fresh and moist, after being newly turned up, and when not done broad-cast, is usually performed by one other of the numerous machines already mentioned, which all act upon the same principle. When dried, some farmers, however, still put it in by hand, from a small instrument formed like a pepper box, with holes at one end, fastened to the end of a walking-stick, and followed by a man with a rake to cover the seed; the crowns of the drills being in either case flattened down by a light roller, and the seed sown in regular rows, at the depth of about an inch and a half, along the middle of the tops, directly over the manure. A common mode is also by the hand drill, which follows the roller, to which it is attached by a rope, and the seed is sown upon one-bout ridges in the following manner. The roller, though of course wide enough to cover two ridges at once, yet, on the first turn, “takes but one ridge with one of its ends; and, in returning, while it rolls this a second time with the same end, rolls a second ridge the first time with the other; which again, in returning, it rolls a second time, along with a third ridge the first time. In this way it goes twice over the ground; the drill depositing the seed between the first and second sowings.”—*British Husbandry*.

PROFITS OF MANUFACTURERS.

During the agitation of the corn-law question, the relative profits of agriculturists and manufacturers have formed the subject of much controversy; it being affirmed on the one side, and denied on the other, that manufacturing profits are enormous; and that it is the difficulty of employing the increasing capital of the manufacturers,—increasing from these profits far beyond the field of exertion;—which is the real evil. The manufacturers, as Mr. Denson justly observed at the Doncaster meeting, are suffering under a plethora of wealth—and it is impossible that they can so employ their surplus profits as to produce anything like the same returns which their original capital has done.

We have this week some conclusive data to go upon, as to the profits of manufacturers.

For some time there have been disputes between Mr. Wm. Hirst, a celebrated manufacturer of Leeds, and his creditors, which have been the subject of arbitration—

the examination of witnesses and the award being published in the Leeds papers. This publication, in Mr. Hirst's opinion, does not embrace all the facts of the case; and in the last *Leeds Intelligencer* we find a letter from Mr. H. containing various particulars foreign to our purpose; but the following is strictly *apropos*. He says:—

“My books will prove the first 25,000*l.* worth of cloth that I sold in 1831, left a net profit of 6,000*l.*, which cloth was manufactured in less than six months from my commencement in that year. If any disbelieve this, I am ready to accompany them to the books. But as some have remarked that this is a large profit, I will adduce a stronger proof of the correctness of that statement, by referring to Messrs. Hirst and Heycock's books, now in the possession of Messrs. Tanner and Young, from which it will appear, that in the first six months of 1828, under my management for Messrs. Hirst and Heycocks, I cleared them a net profit of 10,000*l.*; if any dispute this, let them apply to Messrs. Hirst and Heycock's books for proof, and call them and myself to explain fully.”

Now does not this confirm—and more than confirm—all that has ever been asserted with respect to manufacturers' profits? And yet, whilst they are making their twenty-five to thirty per cent., they grudge the farmer the small profit he makes upon his capital! Verily they are a selfish set.

DICTIONARY OF ARTS, MANUFACTURES AND MINES. BY A. URE, M.D. Parts 8, 9, and 10. Longman.—

Dr. Ure's labours are completed, and this valuable dictionary is now before the public in a finished state. We have repeatedly spoken of the utility of the work, and borne testimony, as far as our knowledge permitted, to the efficiency of the author. This dictionary will, no doubt, have as it deserves, a great sale at home, but it must have a yet greater one in our new colonies. Information is conveyed in the clearest manner, and, by the aid of wood-cuts, the details of manufacture are presented to the eye, so as to greatly facilitate the reader in any new study. The descriptions of the various manufacturing processes are clearly given, without any jargon of technical terms, and the illustrations comprise no less than twelve hundred and forty well executed wood engravings. Dr. Ure says in his preface—“The task which I have undertaken in the present work is to describe and explain the transformation of the primary materials, by mechanical and chemical agencies, into general objects of exchangeable value; leaving on the one hand to the mechanical engineer that of investigating the motive powers of transformation and transport; and on the other hand to the handicraftsman that of tracing their modifications into objects of special or local demand.” In thus making a distinction between those operations which produce a change in the quality of substances, and those which merely alter their forms, Dr. Ure has been enabled to enter at large into all manufacturing processes without swelling out his Dictionary to the size of an Encyclopædia. The whole work is comprised in ten parts, which would form, when bound together, two tolerably thick octavo volumes.

BONE MANURE is considered the best that can be laid upon land. Nearly every family that occupies a garden would have sufficient bones from their own table, if carefully preserved the whole year, to manure a garden; the bones should be broken small. The effect of a small quantity of bone-dust sown with peas, carrots, onions, &c., is quite surprising. The same may be said when small pieces are put into the earth when potatoes are planted. By this simple and economical system we should dispense with the heavy load of manure in the wheelbarrow, and also with buying, every spring several shillings' worth of manure.—*Magazine of Domestic Economy*.

ENGLISH AGRICULTURAL SOCIETY.

The First Annual General Meeting of the above Society was held at the Society's Office, 5, Cavendish Square, on Wednesday, the 22nd May. The attendance of members was numerous and highly respectable. Amongst those present we noticed His Grace the Duke of Richmond, the Right Hon. Earl Spencer, Sir J. Johnston, Bart.; T. Duffield, Esq., M. P.; E. Buller, Esq., M. P.; J. W. Childers, Esq., M. P.; T. W. Bramston, Esq., M. P.; E. A. Sanford, Esq., M. P.; Sir P. Jodrell, Bart.; E. D. Davenport, Esq.; S. Grantham, Esq.; R. Matson, Esq.; R. Dean, Esq.; R. Rigg, Esq.; T. R. Barker, Esq.; J. Ellman, Esq.; B. Flounders, Esq.; French Burke, Esq.; G. Kimberley, Esq.; C. W. Johnson, Esq.; H. Boys, Esq.; W. F. Hobbs, Esq.; H. Gibbs, Esq.; Col. Challoner; H. S. Thompson, Esq.; W. Woods Page, Esq.; Rev. J. R. Smythies; C. Hillyard, Esq.; T. A. Champion, Esq.; and several other Gentlemen of great landed property.

The Right Hon. EARL SPENCER, the President of the Society, having taken the chair, proceeded to assure the gentlemen present that he felt very happy in having the honour to address so numerous an assemblage of members on that, the first anniversary of their Society. He had the satisfaction of telling them that the Society was going on in a most prosperous manner, but it could not be expected that their exertions for one year could have produced any great amount of practical benefit, or any great practical results. (*Hear, Hear.*) But though they had not done much, they had laid a very good foundation. Since the formation of the Society 1,100 persons had enrolled their names amongst its members, and the committee had been enabled to invest certain sums of money in the funds, which they had every reason to believe would enable them to do a great deal of good. This Society was a very powerful machine, and had been put in action for a most important and desirable object, and he trusted that those who took an interest in the welfare of the agricultural classes, would endeavour to direct the machine in such a manner as best to secure the objects for which it was originally intended. The committee, he was sure, would do all they could to suggest improvements and try experiments, and generally to improve agriculture in every way in their power. Much would depend on the members—and the Society should be met also by the support of the farmers of England. (*Hear, hear.*) When improvements should be suggested to be made, the committee must request the members and farmers to test them by experiments before they should be announced to the world recommended with the sanction of their approbation. One or two experiments would not be sufficient as very different results might be produced by a difference in soil and situation, and the experiment, which would succeed in one soil and situation, might not in another. To determine therefore whether suggestions would be deserving of approbation, it would be necessary to ask gentlemen to try experiments on their own farms.

Another mode, which would be most important in advancing the objects of the Society, was by disseminating the information which would be obtained through the medium of those experiments, from one part of the country to another; though in every part of the country great improvements were taking place, yet those commonly practised in one part were entirely unknown in other parts. They had therefore begun by publishing one number of a Journal, in which they had given all the novel agricultural knowledge which they had possessed up to the time of publication. He could not say when the next publication would take place, but that as they got useful information they would publish other numbers. But the Report of the Committee would state more regularly than he could what steps they had taken, and what they intended to take. According to the constitution of the Society, the President was an annual officer. He would not, therefore, have the honour of presiding over it after the meeting in Oxford, in July next. Those would be the last duties which he should have to perform. He assured them, that he felt highly flattered in having had the honour of being chosen President of such a Society on its first institution. He had long desired to witness the formation of such a Society—and he now experienced the highest gratification in seeing it in so prosperous a position. It had been the object of the Committee, to consider who among their patrons would be the best person to elect to the office of President for the next year; and it was suggested that the person who would give them by his name, his station in the country, and his general services, the greatest influence and strength, would be the Duke of Wellington. (*Hear, hear.*) With that view, the Committee had desired him to write to the noble Duke, to inquire, whether he would accept of the office, if he should be elected. He was sorry to say, that the noble Duke had declined the office for the reasons stated in the letter which he would read to them:—

“London, May 17, 1839.

“MY LORD,—I am much flattered by the desire of any of the members of the English Agricultural Society that I should fill the office of President.

“If I was not quite ignorant of the art, and persuaded that I should be unable to render the Society any service, I would with pleasure undertake to perform the duties of the office; but I hope that I shall be excused for declining, and entreat you to urge the members of the Society to fix upon one to be their President more likely than I can be to promote their views.—I have the honour to be, my Lord, your Lordship's most obedient humble servant,

“WELLINGTON.

“The Earl Spencer.

“Spencer House.”

They would therefore see that on the part of the Duke of Wellington, it was not a want of desire to promote the agricultural interest, which had caused him to decline the office, but a feeling that as he was not practically engaged in agriculture, it would be filled to greater advantage by some other person more practically conversant with the business. (*Hear, hear.*) Another point, to which their attention was to be called, was that twenty-five Members of the Committee went out each year by rotation, who were however re-eligible.

He would now read the names of those persons who went out this year. They were—

Benett, J., M.P.	Knatchbull, Sir E., Bart., M.P.
Buller, E., M.P.	Long, W., M.P.
Buller, T. W.	Miles, W., M.P.
Cayley, E. S., M.P.	Paterson, W. J.
Challoner, Colonel	Pell, E.
Childers, J. W., M.P.	Price, Sir R., Bart., M.P.
Couteur, Colonel Le	Pusey, P., M.P.
Curteis, E. B.	Slaney, R. A., M.P.
Eliot, Lord, M.P.	Spencer, Hon. Capt., M.P.
Estcourt, T. H. S. B., M.P.	Verney, Sir H., Bt., M.P.
Flounders, B.	Whitbread, W.
Heathcoat, J., M.P.	Wood, J.
Johnstone, Sir J., Bart.	

The Committee had selected a list of those who were to be submitted to them for re-election. He would read the names of those gentlemen :—

Benett, J., M.P.	Johnstone, Sir J., Bart.
Buller, E., M.P.	Miles, W., M.P.
Cayley, E. S., M.P.	Price, Sir R., Bart., M.P.
Challoner, Colonel	Pusey, P., M.P.
Childers, J. W., M.P.	Slaney, R. A., M.P.

It was intended not to re-elect a certain number of those, who went out by rotation. This was owing solely to those gentlemen not finding it convenient to attend constantly; and it being considered more conducive to the well-doing of the Society, that new members should be elected. The following persons were therefore proposed to be elected :—

Acland, T. D., M.P.	Hillyard, C.
Barclay, D.	Hobbs, W. Fisher
Barker, T. Raymond	Hodges, T. L., M.P.
Baring, Hon. W. B., M.P.	Hurst, R. H., M.P.
Benett, J., M.P.	Johnstone, Sir J. B., M.P.
Boys, H.	Kimberley, G.
Blanshard, H.	Kinder, J.
Bramston, T. W., M.P.	Lefevere, C. S., M.P.
Buller, E., M.P.	Miles, W., M.P.
Burke, F.	Page, W. Woods
Burrell, Sir C. M., Bart. M.P.	Price, Sir R., Bart., M.P.
Cayley, E. S., M.P.	Pusey, P., M.P.
Challoner, Colonel	Pym, F.
Chapman, T.	Rham, Rev. W. L.
Childers, J. W., M.P.	Sanford, E. A., M.P.
Deane, J.	Sherborn, G.
Duffield, Thos. M.P.	Slaney, R. A.
Ellman, J.	Smith, J. A., M.P.
Ellman, T.	Smythies, Rev. J. R.
Euston, Earl of, M.P.	Thompson, H. S.
Gibbs, H.	Tillyer, J.
Grantham, S.	Weall, Thomas
Hall, G. Webb	Wilson, Henry
Hayter, W. G., M.P.	Wright, J.
Heneage, G. F.	Youatt, W.

He should state that the Committee had it in view, that the house in which they were then assembled, should be thrown open on stated evenings, and that there should be a library established for the use of the members, that they might meet and discuss agricultural subjects; in short that it should be a sort of agricultural club. At present however, looking to the state of their finances, they would not be justified in attempting to do anything which would make it worthy of the Society. He thought, however, that they should be soon able to open it in a manner which would be

agreeable to the members. He should state that a Lecture was to be delivered at three o'clock that day, by Mr. Cottam, on the Marquis of Tweeddale's machines for making bricks and drain tiles.

The NOBLE EARL then read the Report of the proceedings of the Society since its commencement.

REPORT.

It is with much satisfaction that your Committee lay before the Society their first yearly report on the general state of our affairs, since although our efforts for the improvement of English husbandry are as yet necessarily imperfect, the support which has been received from the public warrants a confident hope, that those efforts if steadily continued on our part, will be duly seconded on theirs and will meet with final success.

The number of our members consists on this our first anniversary of 230 Governors, 72 of whom are for life, and 158 by a subscription of 5*l.* yearly, and of 874 ordinary members, 64 of whom are for life, and the remaining 810 by subscription, the total being 1104 members of all classes.

A statement of our finances will be found in the balance sheet annexed to this report.

Since our last report a list of prizes has been published for stock to be shown at the approaching Oxford Meeting. These amount altogether to 740*l.*, besides 50*l.* for extra stock, implements, roots, and seeds, 50*l.* for a draining plough, and two prizes of fifty sovereigns each for the best specimens of white and of red seed-wheat, this last being an object which your Committee regard as of especial importance. It has been already reported to the Society that ten prizes had also been offered for essays to be read before that meeting. On this point, as the award of the judges is not yet known, it can only be stated that there are claimants for all those prizes, and that there is competition for nine. Your Committee cannot leave this subject without adverting to the fact that the active local committee which has been for some time engaged in making the necessary arrangements for the meeting, has received the most obliging encouragement from the highest authorities both of the University and city of Oxford.

It has been already made known to you that communications have been opened with the agricultural societies of Paris, Lyons, Lille, and Geneva. We have now to add those of Thoulouse and Bordeaux abroad, and the Entomological, Horticultural, and Statistical societies at home.

It being extremely desirable that according to the practice of other societies, we should form a Library of reference open to our members, application has been in the first instance made to the Treasury for the use of those books which formerly belonged to the late Board of Agriculture, and the loan of these has been accorded us.

A request has been further addressed to the same quarter that the Director of the Ordnance Geological Survey, Mr. De La Beche, who among other objects, is in that capacity collecting specimens of the various soils and subsoils of England, might be permitted to supply the Society with duplicate specimens to be deposited in our Museum, on our undertaking to defray any expense that may be thereby incurred, and to this request also a favourable answer has been received.

In accordance likewise with the experience and practice of other societies having for their object the promotion of any department of knowledge, it has been determined to publish from time to time such communications of facts or such other suggestions, authenticated by the names of the writers, as appear

likely to contribute to the progress of husbandry, and the first number of our Journal was accordingly published in April last.

Having thus reported such steps as your Committee have taken in discharge of the trust committed to them by the Society, they are now desirous shortly to advert to some of the heads under which it appears to them that our future labours in the promotion of agricultural knowledge may be conveniently classed. The first of these appears to them to be a more accurate acquaintance with the characteristics of soils, and it might properly be termed the

I.—CLASSIFICATION OF SOILS.

It is well known to practical farmers that in fields where the soil is seemingly throughout of one character, various qualities are found by experience to exist in different portions; that diversity is found of course to be greater in larger divisions such as farms, parishes, and hundreds. Attempts have been made by chemical examination to ascertain and account for these variations, but not as yet with any decided success. It appears however that geologists, in making their surveys, often readily distinguish the strata which they seek to lay down in their maps by the vegetation which appears on the surface, and many facts might be adduced in support of the connection between the geological and agricultural characters of given districts. It has been proposed therefore by the Journal Committee that a survey should be made of the Weald of Kent and Sussex, as a first step towards bringing this view into a tangible shape, it being obvious that a correct knowledge of the various soils of this country is the only solid foundation of English agricultural science.

II.—PERMANENT IMPROVEMENT OF SOILS.

The large sums yearly laid out in drainage, and the yet larger amounts which might probably be so expended with advantage, show the necessity of attending carefully to the details of this process, as to the depth, distance, materials of the drains, in different soils and inclinations of level. The Deanston process of deep and frequent draining, coupled with subsoil ploughing, appears also to deserve especial attention; soils too which are not over wet may still be found capable of being deepened, as well as of being otherwise improved in their chemical or mechanical character by judicious admixture.

III.—PRODUCTIVENESS OF SEEDS.

Under this head it is desirable that experiments should be made by individual members on the comparative productiveness of each kind of corn, in amount both of grain and of straw upon different qualities of soil: nor can the result be regarded as complete unless the goodness of the grain, its power, that is, of yielding flour, be tested as well as its weight and bulk. It has been even shewn in one experiment that two samples of flour similar in apparent quality have yielded different proportions of bread. In the same way the productiveness of the varieties of turnip, beet, carrot, potato, &c., should be respectively tested: and the bulk being ascertained, the nutritive properties possessed by equal bulks should be discovered, either by chemical analysis or by actual trial in the feeding of cattle. These roots might also be tried with advantage against each other, as turnips against mangel wurzel, both as to amount of produce and as to nutritive power, and

that too upon the different kinds of stock usually kept.

IV.—MANURES.

This again is a large subject complicated by the various conditions of soil, crop, climate, and time under which the various manures may have to be applied. Without attempting at present to lay down specific details, it will be sufficient to stimulate the inquiries of our members if we enumerate some of the principal heads.

I.—Natural or farm-yard manure. 1. Degree of fermentation. 2. Time of application. 3. Mode of application. 4. Compost heaps. 5. Improvement by superior feeding. 6. Effect on different crops. 7. Liquid manures.

II.—Artificial manures of a similar nature prepared in towns.

III.—Refuse manures, as Bones, Rapecake, Rags, Malt-dust, &c.

IV.—Mineral manures, as Lime, Chalk, Gypsum, Marl, Saltpetre, Peatashes, Salt, &c.

V.—ROTATION OF CROPS.

Under this head your Committee will only recommend at present, that endeavours should be made to ascertain the influence, sometimes favourable and in other cases hurtful, which various crops exercise on others by which they are followed, and which is now supposed to be occasioned by an excrementitious deposit left by the roots of plants in the soil. They would also however, suggest to members the practical advantage which may arise from multiplying and varying their green crops for the regular support of an increased amount of stock throughout the year.

VI.—STOCK.

They will equally abstain from going into detail under this head, as to the many important points in which a comparison might be instituted between our different breeds of cattle and sheep. They trust that one direct effect of the Society's exertions, will be to bring the best blood of the most improved breeds into districts where these are comparatively unknown. They are disposed to think that many improvements might be made in the management and feeding of stock, and they would particularly recommend to members of the Society, the consideration, whether they might not advantageously adopt a more active breed of cart horses than is usually met with in England, and whether also some changes in the mode of feeding them might not produce increased economy, without diminishing the comfort of the animals or injuring their condition.

VII.—MECHANICS OF AGRICULTURE.

Under this head great improvements have been effected of late years. Some parts of the country, however, are much in advance of others in their adoption, whether as regards the better construction of ancient implements, the plough in particular, the employment of those which have been recently invented, such as the drill, the scarifier, or the turnip-cutter, or lastly in the employment of fixed machinery at the homestead, driven by steam, water, or wind. In these as well as many other improvements of husbandry, the North and the West of England have little more acquaintance with the practices of each other, than two distinct nations might be supposed to possess. The disposition of farm-buildings may be included under this general head.

VIII.—DISEASES OF CATTLE AND PLANTS.

1.—*Veterinary Art.*

A deputation has been appointed to confer with the heads of the Veterinary College upon this subject.

2.—*Diseases of Plants.*

Little is known at present of the real nature of the diseases to which plants are liable, and still less of any mode of prevention or cure.

IX.—GRASS FARMS.

The management of these farms, though in some points necessarily connected with preceding heads, is sufficiently distinct and important to form a separate head of future investigation, especially as little more is known at present than that different pastures have very different effects on the produce and condition of the stock placed upon them. If it be true, as has been asserted, that the Dutch butter whether fresh or salted is much better to keep than our own, it will be well worth while to inquire into the difference of dairy management in Holland and in this country.

X.—PHYSIOLOGY OF AGRICULTURE.

This last head would include questions of a more abstract nature, and whereas, under the others, we should have to observe and record matters of fact, as for instance, that bone-manure is beneficial on certain soils, and inefficient on certain other soils; under this head we should inquire after causes, and endeavour to answer the question, what is the constituent element of bone, which promotes vegetation on some soils, and how is that element rendered in-operative elsewhere.

Your Committee having thus adverted to some of the principal heads which appear to them of most immediate interest in the present state of English Husbandry, will conclude by expressing their hope, that the Members of the Society will strengthen its collective endeavours by their own individual efforts on their respective farms and properties, and that a mass of facts and observations may thus gradually be brought together, by the careful comparison of which, new light may be thrown on many of the obscure and doubtful points of Agricultural Science.



The following is a succinct Account of the State of the Funds of the Society :—

Total Receipts since the commencement of the Society.....	£5,417	0	0
Total Expenditure for Charges			
of Management.....	£1,020	0	2
Cost of Furniture.....	121	10	2
Prizes paid.....	70	0	0
Capital invested in Funds	3,000	0	0
Balance at Bankers.....	1,196	0	0
Annual Income from Subscribers.....	£1,550	0	0
Dividends on Stock.....	103	16	0
Total.....	£1,653	16	0
Subscriptions in course of collection....	£1,498	0	0
Dividends receivable.....	34	9	8

But (said the Noble Earl) to effect all our objects, we ought to have an income of not less than £2000 a year.

T. W. BRAMSTON, Esq. moved that the report be adopted and printed for distribution.

Mr. DEAN seconded the motion, which was carried unanimously.

J. W. CHILDERS, Esq., M.P., said that though he regretted that the application to the Duke of Wellington had not been successful, yet there was another noble Duke the most fit in England for their purposes—he meant the Duke of Richmond. (*Hear, hear.*) It would be unworthy of him in that meeting and in presence of the Noble Duke, to enter into a detail of the Noble Duke's services, or his capability to fill the office with advantage to the agricultural classes—he would therefore simply propose the Duke of Richmond to be their President for the next year.

E. A. SANFORD, Esq., M.P., seconded the motion.

B. FLOUNDERS, Esq., inquired whether it was absolutely necessary that Earl Spencer should retire from the Presidency. He hoped that nothing would divert him from the interests of the Society.

The CHAIRMAN replied that it was one of the Rules of the Society that the President should go out annually, and not be re-eligible for three years. He could assure the meeting that whatever situation he should fill, he would never relax his exertions to promote the success of the Society. He did not think that it was likely that he should be placed in any situation which would prevent him from attending to the objects which they all were desirous to effect. (*Hear.*)

The question that the Duke of Richmond should be elected President for the ensuing year was then put and carried unanimously.

The Duke of RICHMOND said that nothing would have induced him to accept the office of President if the noble earl who at present filled that office were by the Rules of the Society re-eligible. He regretted that the Duke of Wellington had not accepted the office, as his name and influence in the country would have drawn to the Society public attention, and thereby public support. He regretted that the choice of President had not fallen on some one more able to discharge the duties; but he promised, with the support of the Society and of the farmers of England, to do his best to carry out their common objects, and to fulfil the duties of the situation.

The Report of the Committee was then adopted.

It was subsequently moved that it should be printed and circulated. This was also agreed to.

The CHAIRMAN next said that, though he believed it was not formal for a chairman to move anything, he would state that the next proposition for the meeting to decide was whether they would elect and re-elect those members of the Committee named in the lists which he had read to them.

The names having been again read over, the list as proposed above was agreed to.

His Grace the Duke of RICHMOND moved that the thanks of the Society be given to Earl Spencer for his kindness and attention to the interests of the Society during his year of office as President.

This motion having been seconded and carried with acclamation,

The Noble CHAIRMAN expressed his gratitude to the meeting for their kindness. He hoped that they would have a full meeting at Oxford both of men and other animals (*laughter*), and that the show would be worthy of the Society.

The meeting then separated.

IMPORTANT SALE OF SHORT-HORNS, SHEEP AND HORSES,

AT MR. CHRISP'S, DODDINGTON, NORTHUMBERLAND.

On Thursday, the 9th May, Mr. Wetherell, of Durham, offered Mr. J. Chrisp's celebrated stock to public competition; and the numerous attendance of eminent breeders from all parts of the empire sufficiently indicated the celebrity which that gentleman's short-horns had obtained. The symmetry, the touch, and the high condition of every animal, excited general admiration, and did great credit to Mr. C.'s judgment and industry. The sheep, 1,200 in number, were sold before dinner. They consisted of pure Leicesters, crosses from Cheviot ewes by Leicester tups, pure South Downs, and crosses by South-down tups, and a few pure Cheviots. They all brought good prices. After the sheep were sold, Mr. Wetherell announced that an hour precisely would be given for dinner, and he requested that gentlemen who did not intend to dine would refrain from entering the fold-yards and stalls of the cattle. About 500 sat down to an excellent dinner, provided by Mr. Davison, of the King's Arms, Berwick, under a spacious booth communicating with the barn.

JOHN GREY, Esq., of Dilston, presided with his usual ability. After the health of the Queen had been drunk, with great cheering, the Chairman proposed the health of Mr. Chrisp, and spoke in terms of high commendation of his unwearied industry, in having brought his stock to such a pitch of excellence and fame, as the large and respectable company which had that day been brought together sufficiently testified. The toast was drunk with all the honours.

Mr. CHRISP returned thanks, and assured the company how deeply sensible he was of the honour they had just conferred upon him. Referring to what had been so kindly said by their excellent chairman, with respect to the stock which would that day be offered to their notice, he could only say that no expense or trouble had been withheld, to render them deserving the attention of such a company as he had the honour to address. He was proud to see so many eminent friends to agriculture assembled: it taught him to believe that the improvement of stock and agriculture in general was occupying public attention, and required nothing but the patronage and support of the great landed proprietors to reclaim every waste and drain every bog which had hitherto disfigured the face of the country. He lamented that a few instances should yet be found, where absentee landlords left the controul of their estates to agents, whose imperious deportment obstructed improvements, and compelled a hardy and brave peasantry to quit their fatherland in quest of a livelihood in a foreign country. He again thanked them for the honour they had done him, as well as for their attendance, and begged to propose the health of their worthy and distinguished chairman.

Mr. GREY's health having been drank with rapturous applause, that gentleman, in returning thanks, reminded the company that Mr. Wetherell was threatening him with his sand-glass, yet he could not refrain from expressing what pleasure it always gave him to meet his agricultural friends in Glendale. He saw many old familiar faces around him, which called to his memory the most pleasing associations. He was sorry that his visit to them at this time had been so hurried:

yesterday he had attended a rent-day of the Greenwich Hospital in another part of the county, and he had travelled 80 miles since seven o'clock last evening to be with them to-day. (*Cheers.*) He should be happy on all occasions to do his utmost to promote the cause of agriculture. (*Applause.*)

Mr. W. HINDMARSH proposed the health of Mrs. Chrisp and her family; and the toast was drunk with all the honours. Mr. Chrisp acknowledged the toast in suitable terms.

The health of the judges of the sale was next given, and W. Jobson, Esq., in their name, returned thanks.

The health of Mr. Wetherell followed; also that of the purchasers at the sale.

The CHAIRMAN next paid a warm tribute of praise to the labours of the Highland Society; and as that celebrated body would, ere long, honour this neighbourhood with a meeting, he hoped that the friends of agriculture, south of the Tweed, would not be slow in coming forward with the necessary subscriptions. He could not, in this place, mention the Highland Society, without coupling with it the name of a gentleman present, whom he had long known and respected, Mr. Mc Braire, who had always been a liberal friend to agriculture: he would therefore propose his health, and prosperity to the Highland Society.

Mr. MCBRAIRE, of Broad Meadows, Berwickshire, returned thanks for connecting his name with the Highland Society. With regard to what constituted the permanency of agricultural societies, he would say that as the sinews of war were said to be money, so money was what was required to ensure stability and usefulness to such institutions. Let not the gentlemen of Northumberland suppose that the paltry sum of 300*l.* was all that was necessary to enable them to meet the Highland Society; but he had no misgivings that the supplies would fall short, for when he told them that the Duke of Roxburgh had put his name for 50*l.*; the Marquis of Tweeddale his for 50*l.* (*applause*;) and a great many others in Berwickshire had doubled their subscriptions, he hoped that such an example would not be thrown away upon their southern friends.

Good afternoon was then drunk, and the company hurried to the sale yard. The arrangements here were complete: the cattle had ingress and egress at opposite directions, while the company were judiciously prohibited from entering the temporary inclosure, lest the pressure might interfere with Mr. Wetherell's duties.

Old Princess (No. 1) was introduced, when Mr. Wetherell, after briefly extolling the merits of the stock which he was about to offer to their notice, particularly urged upon gentlemen who were about to commence the breeding of short-horns, to be particularly attentive to purity of blood, without which attempts to produce the short-horns, and bring them to excellence, would prove futile. The splendid animal before them was of the blood of St Alban's, and here he begged to mention a fact, not generally known, that Mr. Mason's Monarch was got by St. Alban's, and not by Satellite, as stated, which he could prove from the best testimony. Mr. Latouche had shown him a herd of seventy cows, the flower of which was of the blood of St. Alban's.

Old Princess was an object of general admiration. She was gazed upon by the assembled thousands with as much admiration as the Ame-

rican ox, at the Egyptian Hall. Her broad deep form, the perfection of all her points, her great size, her enormous fatness, as she trudged about the ring, created a feeling of regret that years had brought her so near her end. It is unnecessary to give the price of every lot, and the purchaser's name. However, we cannot refrain from mentioning a few:—Red Duchess, by Bachelor, dam Curry's Duchess, by Wellington, was knocked down to—Robinson, Esq., of Bedfordshire, at 120 guineas; C. C. Morgan, Esq., from Lexington, America, purchased four heifers for 225 guineas; R. Sanders, Esq., of Cumberland, a yearling heifer, for 60 guineas; Mr. Thompson, of Pawston, bought a roan bull, by Borderer, for 88 guineas; Grant Duff, Esq., of Edin Hall, Banffshire, became the owner of the Peer, at 60 guineas. Competitors met from Cambridgeshire, Bedfordshire, Yorkshire, Cumberland, Fife, Aberdeen, and Stirling. Mr. Falder bought a few heifers, to take out to South Australia. A few lots were for Ireland; and agents of the Duke of Newcastle and Sir R. Peel attended. Mr. Wetherell finished his day's work at half-past seven o'clock in the evening. The proceeds of the sale amounted to 7,000*l.* and a fraction, exclusive of Thirlestane, and a few horses, which were not sold. We may mention that the purchaser of Red Duchess refused 150 guineas for her the day after the sale.

THE COTSWOLD AND DOWN CROSS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—I think it would be quite as difficult for your Correspondent, Mr. Tanner, to prove anything of a personal feeling pervading my letters, as it is to prove a Down sheep, equal in profitable qualities to a well selected half-bred Cotswold and Down; that I have indulged in sarcasm and invective, is a charge to which I am inclined to plead guilty, as being the only efficient weapons against blind bigotry, and deep seated prejudice, whose baneful roots are entwined in a thousand meshes round the hearts of three-fourths of the British farmers of the old school. Argument is out of the question with this class of men, taking them as a body; as a proof of which, let any person venture to broach any new system of farming, or advocate any new breed of cattle or sheep in a market room in the presence of thirty or forty farmers, and however powerful his arguments, or strong his proofs in its favour, he will pay dearly for his temerity by being personally exposed to a shower of ridicule and irony.

This, Sir, is my apology for having thrown into my letters such materials. I will now briefly notice Mr. Tanner's observations, as standing in opposition to my published opinions on the subject of the cross-bred sheep, and in so doing, I must premise my remarks by stating, that my sheep are so crossed, as to possess a different character from any other I have yet met with, and certainly very different in their qualities from the description Mr. Tanner gives of his sheep, and I beg the public to bear in mind, that the following observations are in allusion to the cross of this character only; Mr. Tanner's first objection is, "that he can only keep 1,000 of the cross, where he can keep 1,200 Downs;" it would be no difficult task

to prove that the returns from one thousand cross-breds, would equal those of twelve hundred Downs, but I do not by any means admit the necessity of reducing the number, one single head, where the large sized Down is kept, and of the second cross, the produce of the Down ewe, by the half-bred ram, (the sort I have always upheld as best adapted for farms of middling quality), I will engage to keep *more* on a given quantity of land, than of the large Down, and which shall return one-fourth more in annual profit. My own stock consists of half-breds, bred from half-breds, possessing certain characteristics, with uniformity of wool, countenance, and colour, the latter being for the most part brown, or very dark grey. My farm consists of 402 acres, 25 water meadow, 15 pasture (used chiefly for cows), and 362 of arable and hedges, the latter recently valued under 20*s.* per acre; of this I keep one-ninth part in Saintfoin, and sow half the rest annually with corn. I have, *always at home*, four hundred half-bred ewes, with their lambs in the season, and 150 ewe tugs, which are never out more than five months in the year. No other food than green crops and hay is ever eaten by any of the stock, except rams, and the distance is frequently a mile and a half, to, and from fold.

The rams yield an *average* of 11*lbs.*, the ewes with lambs at their sides, 5*lbs.*, and the ewe tugs 7*lbs.* 4 *oz.* of long yet firm, elastic, felty wool, and not of that deceitful quality described by Mr. Tanner; in this article alone an advantage of two-fifths is clearly established over the Downs, and I submit, the number kept on the farm not only equals, but surpasses that of large Downs generally kept on land of like quantity and under such a system of cropping.

With regard to the prices realized for lambs not being relatively so high as those obtained for Downs, I refer to the list given by me in the letter to Mr. Fielder, which appeared in this paper on the 6th of May, and to add my own which for several successive years have varied from 34*s.* to 36*s.* per head for one half my sale lambs, and 27*s.* for the other half, at five months old, fed on no other than green food—with these facts staring him in the face, Mr. Tanner has made a great mistake in designating mine as "fancy prices," written proof of which can be produced, and I should be happy and pleased by any persons requiring ocular demonstration of the weight and quality of the wool, in exhibiting and weighing it at my house. On a close calculation of this extra quantity of wool and prices, it will be found to exceed one-fourth in annual returns over the Downs. My land will appear to be of no more than average quality; of what description that may be occupied by Mr. Tanner, I have no means of judging, but from the line of country I strongly suspect it is made up of a considerable portion of natural down, where I do not consider any but a small kind of sheep can be kept to advantage.

It is complained of, secondly, that they are not prolific. I find them prolific to a fault, at which my shepherds are always grumbling, they knowing that on stock farms, one strong lamb is better than twins. In 1837, from the first 45 ewes I had lamb down, were produced 15 pair of twins, just one-third.

I am further told my challenges amount to nothing as to the proof which is the more profitable sheep. I have offered to match a certain number of my half-breds against any description of sheep on arable land, which to return the most profit, in

proportion to food consumed, to have every pound weighed and measured. I have also offered to put a given number of my ewe tegs with others, to work for their living in the usual Hampshire way. If Mr. Tanner can devise any fairer means of ascertaining the relative merits, he would oblige me by suggesting them. I think it a subject well worth the attention of the English Agricultural Society, so that the agricultural body may have full information as to which are the most profitable sheep, as well as the most productive varieties of corn. I beg of the managers to take from my flock in the spring of 1840, 50 wether lambs at weaning time, let them be grazed on arable land by the side of other fifties, let every ounce of food be weighed and measured, then at shear-time let wool and carcass be valued, and to the lot which makes the greatest return let the full merit be awarded; at the same time let 50 of the ewe lambs be taken, let them be turned promiscuously among a lot of other store lambs, live together and *fold*, until the same time, weigh the wool, and mark the relative condition.

Such, Sir, are the facts I have to offer in answer to Mr. Tanner's observations on his own unfortunate speculation in crossing. I do not confine myself to "ten, twenty, or a hundred, but come forward with my whole flock, the number of acres where it is kept, and the mode of management, and I ask of an impartial public, whether I do not stock more thickly than the average of Down flock-masters, bearing in mind the quantity of land sown, and allotted to saintfoin or permanent pasture; this admitted, I beg the value of my sale lambs and ewes, with the wool, may be set against the same number of Downs, carcass for carcass, fleece for fleece, and there will be found from three to five shillings per head in favour of every sheep, and two pounds of wool through the whole flock, and calculating the wool at 1s. 6d. per lb. and the sale sheep and lambs at 360, will give the sum of upwards of 150*l.* per annum in favour of the cross-bred, on a farm of equal extent with my own.

I am, Sir, yours respectfully,
J. T. TWYNAM.

Whitchurch, May 23.

THE VEGETABLE CULTIVATOR.

BY JOHN RODGERS.

Longman and Co.

This is unquestionably one of the best arranged and most useful manuals which we have seen upon this subject. As it is one which interests those who seek rural retirement in the vicinity of our large towns as well as the permanent residents in the country, it will we have no doubt, have an extensive sale. The following is an extract:—

MODE OF STICKING PEAS.—The following mode of sticking peas, and especially the taller varieties, is both cheap and simple and possesses many advantages. Procure a number of strong thick stakes or thin poles, in length according to the height of the peas, from five to ten feet, and drive them into the ground on each side of the row, at the distance of three or four yards; pass a small line along the poles taking a turn on each within a few inches of the ground, and as the peas advance, raise the

next turn a little higher, and so on in succession, till they have attained their full height. Sew the tendrils of the peas and truss them round these lines by which they will be supported in a better manner than by the common method of sticking. When spread regularly along the lines, they have a fine circulation of air, and pods can be pulled at all times without injuring the haulm, and as the birds have no twigs to alight on, the portion of the crop which they otherwise would devour and destroy is saved. An excellent way to preserve peas or beans from mice is to chop up the tops of the last year's shoots of furze, and sow them in drills; the author has known it to have been an effectual remedy in several instances, where these mischievous little animals had been very prevalent.

The following experiments on the efficiency of manures in growing turnips were made by Mr. Chrisp, of Hawkhill, Northumberland, in the year 1837.

1. Fold yard manure, led out after Christmas, and turned in spring, at the rate of 30 load per acre—quantity of land not stated, but the same in each experiment, cwt. qr. lb. produced turnips..... 4 2 12
2. $\frac{1}{4}$ ton Owen's animalized carbon, value 12s. 6d., mixed with 8 bushels bone dust, value 23s., in all 35s. 6d., produced 5 0 26
3. 16 bushels bone dust, value 46s. 5 2 11
4. $\frac{1}{2}$ ton Owen's animalized carbon, value 25s. 5 2 6

TURNIP SEED.—The following results of the sowing of turnip seed in the last season, have been communicated in a letter from Mr. J. W. Baylie, near Monk Okehampton, in this county, to Mr. John Way, of Alington, and the market in this city, from whom the seed was procured, and containing a further order. Having spoken of the seed of last year, he says "The turnips which I grew from it were some of the finest I ever saw, indeed they were the astonishment of all who saw them, and it has afforded me great pleasure to give to many gentlemen and large farmers in this neighbourhood my strongest recommendation to you for their seed. In one field of three acres, I had hundreds of turnips (I might say thousands) varying in weight from *twenty to six and twenty pounds each*, and in one small piece of vetch ground, wanting 29 yards of an acre, which I did not sow till the last day of July, I calculate that I had at least six and forty tons of turnips (white globe). It is true that I had bestowed extraordinary labour on the ground. It was old;—I had it trenched with the spade,—sowed it with vetches which were eaten off by sheep, and then plenty of good stable dung with good tilling bestowed on it previous to sowing the turnips, which I did with ashes. The crop however was wonderful as *was also the size, beauty, and soundness of the turnip.*—*Exeter Flying Post.*

PRICE AND QUALITY OF THE BREAD IN BELGIUM.—A correspondent of the *Morning Chronicle*, in allusion to this subject, says, "The rise that has taken place here in the price of corn, has produced a corresponding increase in that of bread. The price of the half-quartern best wheaten loaf, weighing 2 lbs., is now raised to 40 centimes, which is equivalent to 8d. the quartern; mixed bread, wheat and rye, is 5d., and pure rye 4d. the quartern loaf. It must be observed that the food of all the working classes is of the latter quality.

THE SMITHFIELD CLUB.

(FROM THE MARK LANE EXPRESS.)

When the proposition for establishing the English Agricultural Society was first made, apprehensions were entertained by some, that such an institution would injure the Smithfield Club. We always held such fears to be groundless, and it is a source of much satisfaction to us to be enabled to refer to the bill of fare for the next Meeting, which contains an increased number of good things in evidence of the correctness of our opinion. The superior accommodation which has been provided will afford greater facilities for the transaction of business, and conduce much to the convenience and comfort of visitors. The place of exhibition will be changed from the old show yard in Goswell Street, to the "Horse Bazaar, King Street, Baker Street, Portman Square." If the Smithfield Club had possessed unlimited means for the erection of buildings, and laying out premises, with the most complete arrangements, we do not think it would have been possible to have improved upon the accommodation afforded by the establishment which has been engaged for the purpose. The first impression with some may be, that the distance from Smithfield is objectionable; but when the inconvenience suffered from want of space in Sadler's Yard is considered—it being impossible to see the animals to any advantage—setting aside the annoyance to which visitors were exposed from the pressure of a great number of persons into such a narrow compass—we do not anticipate any inconvenience on that ground. The prudent friends of the Club, too, need be under no apprehension lest the new establishment should be too expensive for its funds. We believe, an arrangement beneficial to the pecuniary interests of the Club has been made with the owner of the premises, and as a substantial proof of the prosperity of the Club and its increased means of carrying out the object for which it was established, we observe that an increase has taken place in the amount of prizes offered, of which those for sheep deserve especial notice. The number of subscribers has been increasing for some time past, and still continues so to do. Having so frequently pressed upon our readers the importance of this exhibition, we shall content ourselves upon the present occasion with citing an observation of Mr. J. Wippell, a practical farmer, highly esteemed in his county, made at the meeting of the Devon Agricultural Society on the 14th inst.

"Having mentioned the Smithfield Meeting, he would take that opportunity of saying to all young men who are bringing up as farmers, that he did not know of any mode in which they could benefit themselves more, and extend their knowledge with respect to stock, and agricultural implements, than by attending that meeting. He would, therefore, recommend every young man so situated who had five pounds to spare, to make a point of attending that meeting."

It is highly gratifying to those who have the improvement of agriculture at heart, to observe, that the desire to obtain information is not confined to the larger or more influential societies, as the subjoined statement of the proceedings at an Agricultural

Institution in Cornwall, given in the *West Briton*, will show.

"PROB'S AGRICULTURAL INSTITUTION.—At the last monthly meeting of the members of this institution, a paper was read on the important subject of *the Rotation of Crops*. The member, in introducing his subject, first alluded to the old system of farming when the land was cropped with corn until it was partly exhausted, and was then left to recruit itself under natural pasture. But after the introduction of turnips, and the culture of other roots as field crops, (being the alternation of green and white crops, which is now understood to form the leading principle in every judicious rotation in which it is practicable) a great improvement was observed. So late even as thirty years since, it was not the practice to grow more than an acre or two of turnips on a farm, the whole of the attention of the farmer being directed to the cultivation of wheat. Alluding to the present system of farming, generally practised in our county, he was of opinion that the immense and repeated burnings which take place in the breaking of the land, once in every five or six years, is prejudicial to the growth of corn crops, and injurious to the land itself. He was also of opinion that a change of cropping would be desirable; and he particularly directed the attention of the meeting to a method adopted in many parts of Great Britain, called the "*four-course shift*." For example, suppose the size of a farm to be 150 acres; after laying down one-fifth part for permanent pasture, the remaining 120 acres would be managed in a four crop course of husbandry—first, fallow with turnips; secondly, barley; thirdly, seeds; and fourthly, wheat. In the course of the evening an interesting discussion ensued between the members, on this and other systems. *It was a generally entertained opinion that the covenants respecting cropping, introduced in many leases, were the means of cramping many a farmer from improving his farm.* To an enlightened farmer, who is known to practise the approved modes of husbandry, the management of the land may generally be entrusted with safety during the greater part of the currency of his term, for his own interest will probably teach him not to misuse it during that period, and precautions are only necessary towards its close; but in most cases the security of the landlord, and even the real interest of the tenant, require that the general mode of cropping should be so far regulated as the variability of the seasons will admit. There is no branch of husbandry that requires more sagacity and skill than a proper rotation of crops, so as to keep the ground always in heart, and yet to draw from it the greatest possible profit. Indeed, no one who understands the subject can doubt that it is one of the very last importance, and so pre-eminent a place does it hold in the science of agriculture, that no better criterion can be found on which to estimate the merits of the farmer than the course of cropping which he has adopted. It is by the establishment of institutions similar to this, *supported by the landlord as well as the tenant*, that the most correct method of cropping that is adapted to a parish or district, can be obtained. We understand that it is the intention of the members, as soon as the funds will allow of it, to obtain a course of lectures from some lecturer, who is eminent for knowledge in every branch of education connected with agriculture. They already possess an excellent library, the books of which, with the various periodicals connected with agriculture, are monthly distributed among its members. At the next monthly meeting, which will be held on the 8th of June, the subject of manures will be introduced by a member of the institution."

Little do landlords know what impediments they themselves throw in the way of agricultural improvement by the ill-judged covenants frequently introduced into leases. Such covenants may have been applicable to bygone times, to the "old system of farming, when the land was cropped with corn until it was partly exhausted, and was then left to recruit itself under natural pasture." The

landlords should not be last in the race of improvement, nor place themselves in the position of being rebuked by the tenants, for imposing covenants which "cramp the farmer from improving his farm." In Ireland too exertions are being made, with which many persons in this country are unacquainted. In the report of the proceedings at a late meeting of the Hollywood Agricultural Society, it is stated that

"Since the commencement of the Society, there have been introduced into the parish, the subsoil plough and grubber, with the system of thorough-draining, by the Vice-President, Thomas Greg, Esq., who has also imported some of the finest kinds of Scotch and Durham cows. Twelve of our farmers have sown, this year, Brown's prolific ten-rowed wheat, imported from London, expressly for the society. Italian barley, sufficient to sow six acres, has been imported, and sown for next year's seed, by Mr. Davidson; who has, also, imported a cultivator and grubber. Italian rye-grass is now common; several threshing machines, on the most improved construction, and apparatus for steaming food for cattle, have been erected. Some excellent crops of carrots were also produced in the parish, last year."

IMPROVEMENT OF THE CONDITION OF THE LABOURING CLASS IN IRELAND.

Whenever we have had occasion to advert to the subject of provision for the poor in Ireland, we have uniformly held the opinion that nothing short of *employment* could produce a satisfactory result. The Poor Law which has been adopted, is based upon this principle, but although we take it as being better than no provision whatever, still we see ground of complaint in the circuitous mode by which it is sought to accomplish the end. Gross and glaring as has been the jobbing in the application of monies which have been expended upon public works in Ireland, we have not hesitated to state our belief, that a grant of public money to be expended upon works which would in themselves open further channels of *continuous employment*, would afford the most effective relief to the labouring classes in Ireland. Taking this view of the subject, we contemplate with satisfaction any measure calculated to facilitate the employment of labour. The active employment of the labouring classes is not only the foundation of our national wealth, but tends to preserve tranquility and promote contentment. The dissatisfaction and disturbances now existing are attributable to want of employment which exposes the operative to the machinations of the designing, and leads him on in a misguided course in the hopes of bettering his condition.—Give him full employment, and you will find him more inclined to indulge in his pot and his pipe, than in attending drill by torchlight. Irishmen, it is true, are content with more frugal fare than Englishmen, but if they are deprived of that pittance, poor as it is, similar effects will be produced, and they will be ready for mischief. Mr. Lynch, the member for Galway, introduced some bills in the last session of Parliament, for the purpose of affording facilities to the owners of estates in Ireland to effect improvements, and otherwise opening an

extensive field of employment. He has increased the number of these measures, now nine in all. We subjoin an abridged statement of the purposes which they are intended to effect, and if adopted they would, in our estimation, be productive of incalculable benefit to Ireland, and consequently to the nation at large.

1. A bill to promote the reclamation of waste lands, draining, and inland navigation. The Board of Works to have power to issue a commission for these purposes whenever called upon by the proprietors and lessees (having a life-interest, or 10 years unexpired of a lease for 21 years) of two-thirds of the property to be improved. When the expediency of the proposed works shall have been ascertained, the Board of Works to have them executed out of the money in their hands, to be repaid by instalments, the cost remaining in the mean time as a charge on the respective estates, with priority over all incumbrances upon them, as far as the increased value caused by such improvements is concerned. The charge to be borne by each property is to be awarded by the commissioners according to the benefit conferred upon each by the improvements; and where navigation has been improved, the counties or baronies may be made to contribute towards the expense, and the Board of Works may also, with the consent of the Treasury, make a grant to assist such an improvement.

2. A bill for leasing and exchanging lands, &c. Every tenant for life in possession to have the power of leasing for 31 years at the best yearly rent, without fine or premium; for 99 years for erecting new buildings; and for 60 years for repairing and improving old ones, and for working mines, quarries, &c. Tenants for life in possession may also exchange lands, with the approbation of the Court of Chancery, to be obtained in a summary way.

3. A bill for increasing the powers of leasing to the Provost and Fellows of Trinity College, Dublin. They are to have power to grant leases for 41 years, on certain conditions; which power is also to be extended to the trustees of the schools of Erasmus Smith and Sir P. Dunne's charity.

4. A bill to enable tenants for life, including corporations and ecclesiastical persons, to charge the inheritance with a part of the cost of certain improvements. These are to be confined to draining, enclosing, fencing, and planting. Application to be made by petition to the Court of Chancery, stating the nature and estimated cost of the improvements. A master is then to call for the plans and specifications, and to lay them before the Board of Works, who will report thereon. If the proposed works be approved of, the tenant for life is, after completing them, again to petition the Court, who shall ascertain that the money has been expended to the satisfaction of the Board of Works and of the Court, and shall then authorize three-fourths of the amount expended to be charged on the inheritance; but this sum in no case to exceed three years' rent, or clear yearly value of the estate.

5. A bill for the conversion of leases for lives,

renewable for ever into estates in fee-simple. Tenants for life, and other incapacitated persons, are to have power to sell or buy, with the approbation of the Board of Works, or of commissioners appointed for that purpose; and upon notice to the remainder-man, the reversion in these properties, receiving or paying either an equivalent in land or a sum of money, to be settled to the same uses as was the reversion sold. This conversion to be voluntary for five years, after which to be compulsory, on the same principle as the tithe commutation in England.

6. A bill for the partition and ascertaining the boundaries of lands. Every person entitled to an undivided share of an estate for life or of a greater estate shall be able to apply to the Court of Chancery, by petition, for the partition of the property, upon which the necessary directions shall be given for that purpose, the proceeds being invested in the purchase of other lands to be settled to the same uses. Upon petition to that effect, any one of the going judges of assize shall have power to appoint a referee to ascertain the identity of lands and the boundaries of such as may be disputed. An appeal may be made to the next going judge of assize, who may, if he think necessary, summon a jury, his decision or the verdict of the jury being conclusive.

7. A bill to transfer the management of fiscal affairs from the grand juries to a "board of supervisors" (appointed by the ratepayers), whose proceedings shall be controlled by the Board of Works.

8. A bill to enable the Bank of Ireland to lend money on mortgage; by which means it is expected that the present rate of interest on mortgages in Ireland, 5 to 6 per cent., would be greatly reduced, as it has been in England, by giving the Bank a similar power.

9. A bill to increase the powers and efficiency of the Board of Works, among the means for doing which the sums placed at the disposal of the board are to be very considerably increased. Mr. Lynch thinks "it should be in Ireland what the Minister of Public Works is in Belgium;" and he would even propose, to induce a larger expenditure, that for the making of new roads in the wild and uncultivated parts of the country, one-third should be given by Government, one-third by the county, and one-third by the proprietors of the adjoining estates, unless where the property was not considerably benefitted by such roads. Wherever the Board of Works might consider a road useful, and might think proper to give a third or half of the expense, it should be compulsory on the grand jury, or the fiscal or district board, and the proprietors, to subscribe the other half or two-thirds.

FOOT ROT IN SHEEP.

Foot rot is a disease always, at first, and usually throughout its whole course, confined to the foot. The first indication of foot rot is a certain degree of lameness in the animal. If he is caught and examined, the foot will be found hot and tender, the horn softer than usual, and there will be enlargement about the cornet, and a slight separa-

tion of the hoof from it, with portions of the horn worn away, and ulcers formed below, with a discharge of thin foetid matter. The ulcers, if neglected, continue to increase; they throw out fungous granulations, and separate the hoof more and more from the parts beneath, until at length it drops off.

All this is the consequence of soft and marshy pasture. The mountain or the down sheep—the sheep in whose walk there is no poachy ground, if he is not actually exposed to infection by means of the poisonous matter, knows nothing at all about it; it is in the yielding soil of the low country that all the mischief is done.

Before proceeding further it is necessary we should understand the composition of the foot which presents a structure and arrangement of parts well adapted to the natural habits of the animal. It is divided into two digits or toes, which are shod with a hoof, composed of different parts, similar in many respects to the hoof of the horse. Each hoof is principally composed of the crust or wall, and the sole. The crust, extending along the outside of the foot, round the toe, and turning inwards, is continued about half way back between each toe on the inside. The sole fills the space on the inferior surface of the hoof between these parts of the crust, and being continued backwards becomes softer as it proceeds, assuming somewhat the structure of the substance of the frog in the foot of the horse; and performing at the same time similar functions. The whole hoof, too, is secreted from the vascular tissue underneath.

Now this diversity of structure is for particular purposes. The crust, like that in the hoof of the horse, being harder and tougher than the sole, keeps up a sharp edge on the outer margin, and is mainly intended to resist the wear and tear to which the foot of the animal is exposed. The soft pasturage on which the sheep is occasionally put presents little, if any, of that rough friction to which the feet of the animal is naturally intended to be exposed. The crust, therefore, grows unrestrained until it either laps over the sole, like the loose sole of an old shoe, and serves to retain and accumulate earth and filth, or is broken off in detached parts; in some cases exposing the quick, or opening new pores, into which particles of earth or sand force their way until, reaching the quick, an inflammation is set up, which, in its progress, alters or destroys the whole foot.

The finest and richest old pastures and lawns are particularly liable to give this disease, and so are soft, marshy, and luxuriant meadows. It exists to a greater or less extent in every situation that has a tendency to increase the growth of the hoofs without wearing them away.

Sheep that are brought from an upland range of pasturage are more particularly subject to it. This is very easily accounted for. By means of the exercise which the animal was compelled to take on account of the scantier production of the upland pasture, and also in consequence of the greater hardness of the ground, the hoof was worn down as fast as it grew; but on its moist and new habitation, the hoof not only continued to grow, but the rapidity of that growth was much increased, while the salutary friction, which kept the extension of the foot within bounds, was altogether removed. When the nails of the fingers or toes of the human being exceed their proper length they give him so much uneasiness as to induce him to

pare them, or if he neglects this operation they break. If he pares them after they have broken, the inconvenience soon ceases and the wound heals. When, however, the hoof of the sheep exceeds its natural length and thickness, that animal has no power to pare them down, but there long continues a wound, irritated, and induced to spread, by the exposure of its surface, and the introduction of foreign and annoying matter into it.

The different parts of the hoof, likewise, deprived of their natural wear, grow out of their proper proportions. The crust, especially, grows too long; and the overgrown parts either break off in irregular rents, or by overshooting the sole allow small particles of sand and dirt to enter into the pores of the hoof. These particles soon reach the quick, and set up the inflammation already described, and followed by all its destructive effects.

There is another circumstance which tends to produce disease in an overgrown hoof. The length to which the crust grows changes completely the proper bearing of the foot, for, being extended forward, it takes the whole weight of the superincumbent parts. By the continual pressure on this lengthened part, inflammation cannot fail to commence. The progress of the disease is not equally rapid in every instance; sometimes it goes to a certain extent, and the foot to a considerable degree recovers. All the feet may not be equally affected; the fore-ones, however, are always the most liable to disease, on account of the additional weight which they carry. Sometimes there is only one foot affected, and that is sure to be a fore-one—sometimes only one hoof of one foot, and occasionally one speedily heals while the other continues to get worse and worse.

In the first stage of the disease there is often found nothing but a little overshooting of the edge of the crust, and which is bent in upon the sole, or the edge of the crust is forced asunder from the sole, and a wedge of earth is introduced which presses upon the sensitive substance beneath; but at other times the edge of the crust continues to grow until it envelopes the whole of the sole. It is seldom that there is inflammation enough excited to throw off the whole hoof at once; but it separates at different parts, and at each part of separation there is new horn formed; this, although soft and unhealthy, and not capable of sustaining pressure, covers, and to a certain degree, protects the sensitive parts beneath. By degrees, from increased and long continued irritation, the parts are no longer able to secrete even this weak horn, but small lumps of proud flesh sprout out, and then the work of destruction proceeds in good earnest.

This is the usual progress of the disease, but at other times inflammation seems to be set up at once over the whole of that division of the foot; and there is considerable swelling about the coronet, matter is formed, it breaks out, sinuses or openings run in various directions, and the whole of the hoof is gradually detached. The upper part of the space between the hoofs becomes inflamed and swelled, the whole of the inner surface of the pasterns is sore and raw; ulceration commences, it eats deeply—spreads on every side and upwards—and the toes are separated from each other almost to the opening of the biflex canal. That canal becomes inflamed—proper inflammation of it is added to that of the sensitive parts beneath the hoof—the mucous follicles which it contains pour

out a large quantity of tallowy matter, which flows over the fore part of the foot and between the hoofs, and assist in the accumulation of filth by its adhesiveness.

R. B.

—*Carlisle Patriot.*

THE WOOLLEN TRADE.

The following particulars respecting wool and woollen manufactures, during the year 1838, are extracted from a return made to the House of Commons, dated 7th February, 1839:—

Sheep and Lambs' Wool imported into the United Kingdom in 1838:—

From Russia.....	3,769,102
Denmark.....	480,057
Prussia.....	181,291
Germany.....	27,506,282
Holland.....	138,340
Belgium.....	263,371
France.....	228,660
Portugal and Madeira.....	627,169
Spain.....	1,314,877
Gibraltar.....	172,648
Italy.....	1,758,894
Malta.....	11,886
Morea.....	86,073
Turkey.....	762,018
Morocco.....	511,426
Cape of Good Hope.....	422,506
St. Helena.....	1,172
Mauritius.....	695
East India Company's territories..	1,897,266
New South Wales.....	5,323,411
Van Diemen's Land.....	2,420,002
Swan River Settlement.....	23,020
British North American Colonies..	4,213
British West Indies.....	173
United States America.....	57,785
Colombia.....	188
States Rio de la Plata.....	1,109,638
Chili.....	646,044
Peru.....	2,504,088
Guernsey and Jersey.....	15

Foreign wool.....52,594,555
Produce of the Isle of Man.. 12,141

Total quantity imported...52,606,496

Quantity of foreign sheep and lambs' wool retained for home consumption....45,799,663
Duty free, being the produce of British possessions.....10,069,264

Total quantity retained for home consumption.....55,819,597

Total quantity re-exported..... 1,897,860

Total quantity of foreign wool under bond 5th January, 1839..... 4,017,610

Total value of British sheep and lambs' wool exported in the year 1838...£5,851,340
Ditto of woollen and worsted yarn, including yarn of wool or worsted mixed with other materials.....£3,085,892

Declared value of British woollen manufactures exported from the United Kingdom in 1838.....£5,795,069

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR MAY.

Scarcely within the recollection of the oldest man living has the weather experienced at the corresponding season of any past year, been so changeable, and in many instances, so exceedingly unpropitious to the crops in general, as that which has prevailed, in all parts of England, during this month. About the 15th, a large quantity of snow and hail fell in various quarters, which, aided by the then prevailing unusually cold northerly winds, materially checked the vegetative progress of the young wheat plants, and caused them, particularly in exposed situations, to assume a yellow and otherwise unhealthy appearance. Notwithstanding, however, these atmospheric visitations, the wheat has made by far greater progress than could have been reasonably anticipated under existing circumstances; whilst it is to be hoped that no irrecoverable injury has been sustained: in fact, on examining the roots we cannot but admit that they are exceedingly well spread, and that the continuance of the present favourable weather, will be productive of bountiful crops; since, if the homely distich be true, that "a cold May air, for the barn bids fair!" our farmers have every reason to believe that the harvest will be abundant. In many parts of Norfolk and Suffolk, the latter sown barley plants have suffered severely, and the land has been ploughed up in order that other grain may be sown. Oats appear to have suffered less than any other description of corn; and both beans and peas, though backward, are looking strong and healthy. Complaints have been general amongst graziers and hay farmers of a scarcity of grass; but heavy crops are fully anticipated.

Every description of field labour has been seasonably performed, whilst the crops and fallows are much more free from obnoxious weeds than at this time last year. Sheep and beasts have done tolerably well in the pastures, but the lambs, on being slaughtered, have not fully answered the expectations of the butchers, the quantity of internal fat being comparatively small.

We regret to state, that in many of our western and midland counties, extensive ravages have been committed by the insect on the crops; and that the consumption of turnips by the fattening stock has been so extensive, owing to the extreme backwardness of vegetation, that, in some quarters, very high prices are demanded for the small available stocks of both dry and succulent food.

A complete revolution is being made in the mode by which the supplies exhibited at Smithfield Cattle Market for sale are received. Previously to the formation of railways, the whole of the stock—with the exception of the calves from Essex, which, from time immemorial, have been conveyed by waggons—arrived up to the above market, by drift; but now the case is widely different. Since the opening of the Southampton line, all the most extensive graziers in the Isle of Wight have transmitted their lambs by this conveyance. By the Great Western and Birmingham roads the receipts have been large; but by far greater things are expected immediately the Northern and Eastern Railway (or Cambridge line) is completed, since a direct conveyance will be secured from our great grazing districts. On an

accurate calculation we find but little, if any, difference exists between the sums charged by the railway companies and those by the drovers: but when the excellent condition in which the stock arrives is taken into consideration, every disinterested person must admit that transmission by railway is advantageous both to the seller and purchaser—the former receiving, in many instances, higher rates than those whose stock has been driven to market, the latter being by far less liable to be deceived in the weighing qualities, since it is a well known fact that all kinds of stock which travel far lose a considerable portion of its internal fat.

The intelligence which has arrived from Scotland respecting the appearance of vegetation is not of a very cheering character, since we find that it is in a backward state, even in the most southern parts; yet the prices of most kinds of grain are on the decline in the whole of the principal markets; but fat stock continues to command high rates.

In Ireland, agricultural operations have not suffered so materially as in England; and the accounts thence are quite as satisfactory as could be anticipated, with declining markets. The potato crop is highly spoken of; and so prolific was that of last season, that immense quantities yet remain in the hands of the growers, for which low currencies are demanded.

The following is a statement of the supplies and prices of fat stock exhibited and sold in Smithfield Cattle Market, in the course of the month. There have been on sale, 11,040 beasts, 93,255 sheep and lambs, 1,200 calves, and 2,980 pigs; whilst the prices have ranged as follows, viz.:—beef, from 2s. 4d. to 4s. 6d.; mutton, 3s. 6d. to 5s.; lambs, 5s. to 6s. 8d.; veal, 4s. to 5s. 4d.; and pork, 3s. 10d. to 5s. per 8lbs. to sink the offals.

About 2,500 of the Scots and home-breds which have formed the above numbers have arrived from Norfolk; 750 Scots, runts and Devons, from Suffolk; 370 Scots and runts from Essex; 300 Devons, Scots, runts and home-breds, from Cambridgeshire; 700 short-horns, from Lincolnshire; 400 short-horns and Devons, from Leicestershire; 200 short-horns and runts, from Northamptonshire; 1,100 Devons, from Devonshire; 1,000 Herefords, from Herefordshire; 60 Devons, runts, and Herefords, from Hampshire; 500 oxen, runts, Devons, short-horns and Irish beasts, from Warwickshire and Oxfordshire; 25 runts, from Pembrokeshire; 1,000 horned and polled Scots, and 2,200 sheep, by sea, from Aberdeen, Dundee and Perth; 180 oxen, runts and Devons, from Sussex; 100 cows, runts and Scots, from Surrey; 160 cows, runts, home-breds and Devons, from Kent. The remainder from the neighbourhood of London.

The general quality of the above supplies, particularly as relates to those from Norfolk, Lincolnshire, Devonshire and Herefordshire, has been, for the season, remarkably prime.

The quantity of slaughtered meat, received from Scotland and various distant parts of England, up to Newgate and Leadenhall Markets, have been extensive—they having consisted of 400 carcasses of beef; 6,950 do. of mutton; 500 do. of lamb; and 7,050 do. of pork; most of which have produced fair prices.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, May 28, 1838, and Monday, May 27, 1839.

At per 8lbs. to sink the offals.

	May 28, 1838.		May 27, 1839.	
	s. d.	s. d.	s. d.	s. d.
Coarse & inferior Beasts	2 2 to 2 4	2 4 to 2 6	2 4 to 2 6	2 4 to 2 6
Second quality do.	2 6	2 8	2 8	2 10
Prime large Oxen.....	3 0	3 6	3 2	3 8
Prime Scots, &c.....	3 10	4 2	4 0	4 4
Coarse & inferior Sheep	3 2	3 6	3 6	3 8
Second quality do.	3 8	3 10	3 10	4 0
Prime coarse woolled do.	3 10	4 0	4 2	4 4
Prime Southdown do..	4 0	4 2	4 6	4 8
Lambs	4 10	6 8	4 10	6 2
Large coarse Calves ..	4 0	4 10	4 0	4 6
Prime small ditto.	5 0	5 4	4 8	5 2
Large Hogs.....	3 0	3 6	3 10	4 6
Neat small Porkers ..	3 10	4 6	4 8	5 0

SUPPLIES.

	May 28, 1838.	May 27, 1839.
Beasts.....	2,729	2,953
Sheep and Lambs....	24,800	25,020
Calves.....	240	270
Pigs.....	684	690

By the above comparison, it appears, that the supply of Monday, May 28, 1838, was throughout somewhat less than that exhibited for sale on Monday, May 27, 1839.

SOMERSETSHIRE.

We shall now have full cause to make record of another backward spring, or rather winter, in the middle of this month so identified with every thing that is animating and genial in natural productions. Yes it may now be recorded that in the county of Somerset snow was laying on the Mendip Hills, to be seen at a distance of eight or ten miles at nine o'clock on the 14th of May, and that on the 15th there was a severe frost for the season, that snow was seen quite deep in the neighbourhood of Bridgewater at the distance of eighteen miles at ten o'clock, and in the evening the ground near Yeovil and the borders of Dorset, was covered with snow, and again on the morning of the 16th the frost was more severe than has been known in the memory of the living so late in the month. The potatoes that were spared the day before, and kidney beans, destroyed, apple trees injured, beans and other vegetables, even in sheltered gardens, stiff and bowed to the ground, and other injuries sustained that we cannot calculate on. We had no rain here on the 16th, but around us there were some very heavy snow storms, accompanied by thunder; the latter part of last month we had some heavy rains, which thoroughly saturated the land; a few of the last days of the month, it set in warm, and the vegetation made rapid progress; the beginning of this month was also warm, and we had a little fine rain, just sufficient to lay the dust, and freshen vegetation. On the 8th there was a change, and we had some thunder near us, on the 9th we had a dull cold day, but little rain, with high wind, and in the night and morning of the 10th it blew a perfect hurricane, blew down several trees, and considerable damage done to houses and public buildings at Wells, estimated to the amount of upwards of 100*l*. The foliage of the trees shew considerable injury sustained, the side the wind blew; the wind continued high the two following days, north east and east. I have been thus particular respecting the weather, as it is considered almost without an example for the season of the year; now for the appearance of the coming crops: the wheats have improved, but are looking a very bad colour,

and are evidently affected by the wind and frost, and within these few days have altered for the worse; in appearance the barley has come up badly from the want of moisture, and if not much injured by the frost, will, at any rate, except in the finer mould, come uneven. Beans are come up well, but will suffer greatly if we do not have rain soon. It has been an excellent season for putting in potatoes, as the land from the fine dry warm weather is in a healthy state, but rain is now much wanted for every thing; unless there comes a speedy and decided change in the temperature, both as regards heat and moisture, the harvest must be as late or later than last year. The cold we have had the few last days has given a most decided check to the wheat, and the Lent corn will make no progress, and in some cases it is doubtful whether the crop will not be materially injured. All the early potatoes are cut down, which will put back and injure the coming crop; this will materially increase the consumption of bread before harvest, and when seed time is over old potatoes will most likely advance in price. During the fine days we had there was an increased demand for cows and calves and poor stock, but the demand is now slackened, and it is generally acknowledged that the prospect of the grazier has not been worse for many years. Heifers that will graze, 26 to 28 score, fetched 11*l*., oxen in proportion; cows with calf that will not be worth 10*l*. when dry sold at 15*l*.; weaned calves 3*l*. to 3*l*. 5*s*., nearly the price of yearlings, all this whilst the price of beef and mutton is, if anything, on the decline, and dairy produce decidedly lower. Our wheat markets have been pretty well supplied, and the sale of flour has been dull; there is little doing in other corn, but oats sell better than they did, and there is new demand for them. Barley for all purposes is scarce. The blossom of the apples is not what was expected, being either a total failure or but a partial bloom, and of this there is every reason for calculating a large portion is cut off, first by the high winds and now decidedly by the two last nights' frosts. Cider has advanced in price 4*s*. to 5*s*. per hogshead. Our fat lambs do not turn out very well, neither is there much demand for them; the dry weather is favourable for the poor sheep, and they look generally well. The sale of wool is dull, 14*d*. to 15*d*. for the long combing, and 16*d*. for the finer sorts, very little doing. Our pastures are backward, and haymaking will not commence early.—May 17.

OXFORDSHIRE.

The month of April might justly have been termed a second March, we having experienced a continuation of the same cold ungenial weather almost to the close, that we had so much of in the former one of March, the wind blowing sharp from north-west to north-east and east, especially from the latter point, seldom varying above a day or two together; but since the present month has commenced, we have experienced some warm days, although the nights have been cold, the wind being mostly in the old quarter, but a cloudless sky caused the rays of the sun to give to vegetation a vigorous shoot, and the progress for the time has been great; but we have this day a dismal cold howling wind, being however accompanied with a considerable fall of rain, will, if followed by some warm days, prove of infinite service to the late sown barley and spring wheat, which could not have appeared without rain. The land has worked stubborn and left rough, especially where it had been cross ploughed. A heavy rain about the middle of April caused the strong land to come up lively, consequently required much team labour. The barley put in early comes up well, as do the beans. The wheat is in general looking well, and some of it is forward, several fields however of fallow wheat lost plant very much

during the last two months; they are looking shabby, and must inevitably be too thin besides being overrun with winter weed and hearif, while those sown or drilled on adjoining lands are looking well and comparatively clean; also between those and what was sown after vetches there is a great disparity, the latter not only having lost plant, but are exceedingly foul. Pastures were two or three weeks past looking very barren, but are now much improved, and likely soon to afford a tolerable rise. Hay is plentiful and selling low, but little making more than 3*l.* 10*s.* per ton. Store stock has commanded a good price, but neither beef or mutton have met a corresponding one at any of the recent fairs. We have heard of but little doing in wool of late. Corn markets have fluctuated much during the last two months, wheat having been some weeks sought after with avidity; at others again, it appeared a drug, the mealmen and dealers looking shy, and keeping a good deal out of the market lest they should increase their stocks. Barley has also varied of late for a week or two; best samples were in great request, and brought high prices, but not so much as in some counties; it has now fallen 3*s.* or 4*s.* per qr. We are of opinion a very large portion of barley has been taken off the farmers' hands. Beans (although the last crop yields well) are becoming much inquired after, and are a rising article. Labour mostly 11*s.*, and we are glad to report that wages on the western side of the county have been advanced, though some few employers are still giving too little. Labourers are pretty well employed, and hitherto peaceable, although the itinerant Chartist demagogues are continually lecturing them in the different villages. —May 9.

WILTS.

The wheat crop is the chief object of care and attention to the farmer, and forming, as it does, the means of paying a large proportion of his outgoings, it seems to claim the first notice in a report of this nature, and we have the pleasure of stating that it is generally very promising. Agricultural improvement is making rapid strides. The rational amusement and healthy enjoyment it affords to many of the influential nobility and gentry of the kingdom is having its proper and natural effect on the aspect of the country. Twenty years ago only a small quantity of the wheat on the Wiltshire hills was drilled, but now in some of the best cultivated parishes the broadcast only forms the exception, and in one parish within our immediate notice thirty or forty men and women have been employed for some weeks past hoeing these drilled crops, so that they are not now (as was frequently heretofore the case) overcome with grass, poppy, or other weeds, but have the whole and sole possession of the cultivated and manured soil. While on this subject we would take the opportunity to recommend to those who do not occupy the worst description of soils, to try the drilling of wheat at twelve inches distant from row to row, in preference to six or nine inches. From the greater facility it affords to drilling in the autumn, and likewise in the spring, to horse and hand hoeing, it is probable that its adoption will become very general. The best piece of barley, nearly forty acres, that this county could produce at the last harvest, was drilled at twelve inches. The saving of seed, and the superior state of cleanliness the land is left in for the next succeeding crops, are benefits so apparent, that we expect self-interest will soon bring this system into use. The barley seed time has been good, with rain enough at intervals to start it away altogether, without being so much as to prevent the teams getting on the ground, except for a few days. The remaining spring-sown crops, viz., oats, beans, and peas, are as promising as they can be at this date. The prospects of the stock market are much more cheering than in May, 1838. Then the Swedish and other turnips, winter vetches, and winter barley, had been destroyed by the weather, and the quantity of hay left in the country was very small. Now the vetches are good and the stock of hay in the country is considerable, as the price of from 3*l.* to 3*l.* 10*s.* per ton indicates. The quantity and quality of the lambs are deficient, in comparison with many former

seasons; and from this cause, added to the high price of mutton and wool, it is probable that sheep will be in good demand, except any unforeseen calamity should overtake the turnip crop.—May 10.

GLAMORGANSHIRE.

Barley sowing is only just completed in this county, which is six or seven days later than usual. Although the spring-sowing season has not upon the whole been unfavourable, yet the land has generally worked unkind, being too wet or too dry, which required additional labour to bring it to a proper tilth. The early sown has braided well, but the late sown will not all vegetate without rain. The present dry weather is favourable for preparing the mangel and turnip fallows. The young wheat improved very rapidly during the first week in this month, but the present cold easterly wind has again put a complete stop to it. A large portion set on clover lays is very deficient in plant, the cold ungenial weather in March and April having kept it quite stationary, no tillering having taken place to fill up vacancies. About the 28th of April the temperature advanced, and although counteracted by easterly winds, vegetation made some progress; but the present week is again remarkably cold, the temperature having lowered full fifteen degrees. Stock in general remain still in their winter quarters; turnips and hay have not been deficient. At our spring fairs stock of every kind have been in good demand, with the exception of a reduction which took place during the cold weather in April. Fatstock commanded good prices, mutton having reached 8*d.* and beef 7*d.* a lb. sinking the offal. The corn market is something lower; wheat fluctuates in price with the changes in the weather. Labour is in great demand in this county, and on the railways and other public works from 15*s.* to 20*s.* a week is paid to labourers; masons 30*s.* a week throughout the winter. Yet even at these rates they are dissatisfied, and occasionally stand out for more. In the mineral and manufacturing district in this county Chartist and union meetings are organised, at which idle political demagogues, following the example of their great leader, the "Big Beggarman," address them in the most revolutionary language. They have not the hardihood to assert, that they suffer oppression from low wages, nor can they point out any mode of permanently advancing them; they, therefore, declare war against property in general, and that a more equal distribution of it would be extremely pleasant, and which they assure their blind followers they may easily accomplish. Perhaps at no period in the last half century has the labourer had so little cause to complain as at the present; and we consider that his improved and comfortable condition is strongly confirmed by the great consumption of butchers' meat.—May 10.

NOTTINGHAMSHIRE AND DERBYSHIRE.

Since my last report, the weather has been of the most conflicting nature, and, in general, hostile to the progress of vegetation; the commencement of the month, and till about the 15th or 17th, was one continued winter, the wind blowing east and north-east, with very little variation; the vegetable world became completely paralyzed, and that delightful hue which characterized the termination of April—a luxuriant green—became changed, by the severity of the weather, to a colour resembling the blue. We have, however, since that period, been favoured with a change; and although the wind has veered very little from the north, still the weather has, upon the whole, been more genial. I am sorry to say, that I cannot report anything very favourable, in reference to the vegetable world; a trivial resuscitation has taken place in most varieties of plants, but far from what we are generally led to expect at this period of the year. Plants are now requiring a few copious showers daily, to produce that change and hue which is so desirable, and which, at this season,

we generally anticipate with so much pleasure. Our pastures are becoming extremely bare, and that plentiful supply of grass which the termination of April produced and promised us, has completely vanished, and, unless we have a speedy supply of rain, we shall be obliged to make use of artificial food as a substitute for the deficiency of grass. Our flocks have suffered severely from the diarrhoea, the effects of the strange versatility of the weather. It becoming general in my flock, as a remedy and an antidote I had them brought into the fold-yard during the night, and fed them with tares, which had the desired effect, having a two-fold tendency to recruit nature,—the one by affording them shelter from the north and north-east winds which prevailed, and the other by conveying to the intestines more solid and nutritious food. It is a most economical system to corn-feed your flocks both winter and summer: you introduce a change of food which nature cannot, or does not directly supply them with; it is what I invariably put in practice upon my farms, and often wonder to observe the system so much neglected. Were it generally put in practice, we should not require the auxiliary protection of the corn-laws to support us. For my part, it matters but little to me whether we have high prices or low ones; for I seldom take corn to market, consuming the greater bulk with my flocks at home; and so long as I can obtain remunerating prices for fat stock, I ultimately pocket more money than the direct vendor of corn. Depend upon it, agriculture in this kingdom will always disgrace us so long as we take a single grain to market in a direct manner. Cattle generally are in good condition, and the prices at most of our spring fairs have been remunerative. The general aspect of wheat is good. The wire-worm has again, upon some localities, made dreadful havoc, and a considerable breadth of such land has been resown with spring corn of some description. It is astonishing to observe the general lethargy of farmers; while they are annual sufferers by such like devastations, they seldom apply the mind to the subject to search out its origin. Early sown barley has suffered severely from the frost and snow which visited us at the commencement of the month, while that which was sown at a later date has sustained little or no injury, and its appearance generally is good. Oats, beans, peas, and tares, of both varieties, have felt the influence of the unfavourable weather; but should we have some refreshing showers shortly, they will in general soon acquire a vigorous aspect. Peas will, or does, form the greatest exception, and have felt the effects of the nipping frosts more than any of the other varieties. Our corn markets are abundantly supplied with grain of every description, and though at the commencement of the winter one would naturally have supposed that a scarcity would have been the result before the succeeding harvest, we may now perceive that such fears would have been groundless. Our stack-yards are now well filled for the season of the year, and there cannot now remain a doubt upon the mind of any person as to our being plentifully supplied during the summer. Our wheat crops, upon the whole, are promising; we have some exceptions, but that is the case every year; so that, should a warm summer and, as a general concomitant, an early harvest be the result, we may expect to find prices considerably lower, and bring a just penalty upon the corn-monopolizer; they have had most extravagant prices offered, and which they have, unjustly to the public, refused; and I do most sincerely trust that future prices may be in the scale of declension. The demand for labour is good, and the farmers generally have their fallows in a

very forward state; indeed, some of them have already sown their Swedish turnips, and the principal bulk of them begins to perceive that early sowing is a most successful means to make use of to ensure a good and regular crop.

CAMBRIDGESHIRE.

In consequence of the changeable and unfavorable state of the weather, during the month, all ordinary descriptions of beasts, horses, and sheep, have met with a dull sale at all our markets; the same was also the case at Newmarket Fair, held on Tuesday last, but good things, on the contrary, have been selling at high prices; and as the improvement in agriculture is making rapid strides in this, as well as in adjoining counties, greater attention has also been paid by a great number of persons, to the improvement of stock of all descriptions, and it is gratifying to find that they have been, and will be always the case, doubly repaid for their time and attention, as good stock of all kinds are always disposable at fair prices, whilst bad ones are hard to get rid of at any price. The plant of wheat continues, upon the whole, to have a favorable appearance. The tilth and bean land, in the heavy districts, are looking well, although some of the plants after the seed-layers, are thin and rather sickly; on the lighter soils, generally sown after layers, the plant, with a very few exceptions, has been good throughout the winter, but since the few fine hot days at the beginning of this month, it has run up lighter than was expected to do, although its present appearance promises a fine quality and a fair crop. The beans are a good plant, and are looking strong and healthy, although very late, which must be considered against the crop; the peas are also looking well, and appear to make more progress than the beans. But little can at present be said of the barley and oat crops, except that the plants are generally good—especially the former—some of which is looking strong and well, but a great deal is suffering much from the cold frosty nights, and want of sun. The sowing of early Swedes has commenced, and the land works well; the use of bones has become very general in this county; they are usually drilled in with the turnip-seed, after the land has been previously manured, consequently they are used in smaller quantities, about two or three coombs per acre; some persons put on five or six coombs, without any thing with them; they appear generally to answer well.—May 23.

BEDFORDSHIRE.

Up to the 15th of the present month, every thing in the farming department had progressed favorably; but now a sad reverse occurs, for several nights in succession we have had severe frosts, and the grounds in the morning completely covered with snow. In fact, with the exception of now and then a day, the weather more resembles what we usually have in March, rather than May. The consequence is, that the early fruit is much injured, and the pastures begin to present a very meagre appearance; the effects have also been equally serious as to the cropping generally; every thing stopped in its growth, and many crops have been severely cut. The Wheat, however, seems to have suffered less than any other grain; in many situations, under good management, it is tolerably luxuriant, and if we should soon get the wind round into the South, followed by a succession of favorable weather, we think there would still be a good average crop in this county. The

barley has suffered dreadfully from the same cause, and upon the weaker soils we have seldom seen it look so sickly; some warm showers would doubtless greatly improve it, and we do not at present regard it as a lost case; appearances, however, are much against its ever becoming an average crop. The other crops, as also the young clovers, have likewise been stunted by the long prevalence of the cold North and North-East winds. We are every succeeding hour, however, hoping for a change; and should it come speedily there may yet not be much the matter, though, when we remember that the month of June is just at hand, we cannot but feel some alarm at this very unusual cold weather. The Mangel-Wurzel and Potatoes are generally put in, and where the former was into ground before the late snows, the seeds have had wet enough to make them vegetate, but we think the more recently sown will not come up, as we seldom find this very peculiar seed to do well, unless it has moisture enough in the first instance to start it. On the Southern side of the county our farmers are just commencing Turnip-sowing, or rather drilling, and it is quite necessary that they should have about ten days or a fortnight start of their more fortunate brother farmers who occupy the fine turnip soils in the vicinity of Bedford, Biggleswade, &c. Prices remain about stationary both as to Wheat and Meat generally; Wheat averaging about 9s. per bushel, and meat from 6d. to 7d. per lb. The wool trade languid, with a prospect of lower prices.—May 24.

NORTHUMBERLAND.

This has been one of the coldest and latest springs we have had for some years past, although it has been always dry, which has been much in favour of the wheat crop, yet there are many fields where the soils are light, which are much thrown out of the root, and will be a light crop; but upon the whole we must give our report favourable on the wheat crop; the spring sown wheat is looking remarkably well, also barley, oats, beans, and peas are looking equally promising, should the weather come fine, but at present we have frosty nights with cold dry pinning winds, and the hills covered with snow; vegetation very far back. About a fortnight since we had a few fine days, and grass and corn made a great improvement, but since that it has been quite a storm, and the grass has disappeared altogether. Graziers have been well paid for feeding both cattle and sheep this winter; beef has been selling from 7s. to 7s. 6d. per stone, mutton from 7d. to 8d. per lb. Our corn markets are at present very dull for wheat, the samples being very indifferent, the prices from 7s. to 7s. 6d. per bushel, barley from 5s. to 5s. 4d. per bushel, oats 4s. the best samples, peas and beans 5s. to 5s. 6d. per bushel. Potatoes are now all set, and part Swedish turnips sown; it has been a remarkably dry season for cleaning dirty fallows, and the turnip system is advancing rapidly.—May 13.

KENT.

The great variation in the weather has had an injurious effect on the wheat; numbers of fields are very unhealthy, and very much gone off in colour, and the plant very thin in a great number of cases; but much may yet be done to them by warm weather, with following showers. The barley and oats received a severe check by the cold winds and frosts, and in exposed situations were very much cut off; but the weather since has improved them. The worm has done serious mischief in these crops on

the light soils; the only remedy for this evil, used in these parts, is hoeing, harrowing, rolling, &c.; but even this will not always stop it, but it certainly is of great use where the plant is not lost. Beans, peas, &c., likewise have had their share of the weather, but are recovering. The planting of potatoes is nearly finished, and about the usual acres put in; the late rains will be of great service to them, by making the plants vegetate, and we hope to hear but little loss of plant this season. The clover, sanfoin, and most other grasses, are looking well, but they got a little checked by the frosts. It has been favourable weather for getting forward with the land for turnips, and a few Swedes have already been sown; with showery weather numbers will take the advantage and get in their Swedes, by so doing they will be in time for a second sowing, if the first does not succeed. The hop grounds at the present time, especially in exposed situations, have a very shabby appearance; what with the cold weather, wind, and frost, they have certainly received a very severe check; but like the crops, there is a great difference in the grounds, and must be seen to be believed. The wool trade with us is very dull, but there is much difference in price; but very little is out of the growers' hands yet, having little disposition to give way in price.—May 24.

THE CROPS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—In your widely circulated paper, I think it will be highly gratifying to all your readers to learn that the appearance of the wheat crop of this year is most flourishing, and promises to be one of the most abundant crops known in the memory of man; and if warm weather succeed the fine rains we have had yesterday and this morning, it will also be an earlier crop than the generality of seasons, and be a month earlier than last year.

Many farmers have yet a considerable part of the last wheat crop in hand, owing to its inferiority in quality on the late situations, and from the damp state it was led in, was not earlier fit to thrash; and the inferiority of the samples, will keep down the average price, and thus raise the duty—if it was properly returned the averages would not exceed 68s. per qr. You are at liberty to insert this in your paper of next week if you think proper.—I remain, yours, truly,

THOMAS BATES.

Kirkleavington, near Yarm, Yorkshire.

May 22.

THE LAPACHO TREE.—The lapacho is not only the finest but the most magnificent of all trees. English oak is very fine, but never to be compared to lapacho. From the solid trunk of one of these trees a Portuguese scooped out at Villa Real a canoe, which brought down to Assumption a hundred bales of yerba, (that is, 22,500lbs. of Paraguay tea), several hides made up into balls and filled with Molasses, a load of deals, seventy packages of tobacco, and eight Paraguay sailors to manage the three masts and sails of the large, but yet elegantly scooped out trunk of the lapacho tree. Of this tree are constructed vessels which, when fifty years old, may still be called young. Their frame is not shaken, nor is their constitution debilitated by all the bumps they have on the sand-banks of the Parana, nor by the searching rays of a tropical sun, nor by the "even down pours," as the Scotch have it, of tropical rains.—Robertson's Paraguay.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

CHIPPENHAM FAIR was attended by a considerable number of dealers, and a large, we may say extensive, show of cattle was in the town, much of which was sold at high prices. The cold weather in the earlier part of the week had however the effect of checking speculation to a considerable degree.

SWINDON FAIR.—Although there was a very large number of every description of horned cattle at Swindon Fair, yet the supply was scarcely equal to the demand. Indeed the fair may in some respects be said to be forestalled. Good springers in particular were so eagerly sought for, that many purchasers would not wait their arrival, but met and bought them on the road, and the prices obtained were remarkably high, several fetching 20*l.* and 22*l.* and upwards. The enormous price of 26*l.* was offered and refused for a very fine three-year-old heifer. Beef was rather heavy in sale, and Mutton was altogether as brisk. The horse fair was but thinly attended.

WISBECH HORSE FAIR.—There were very few good horses, and high prices asked for them: the inferior horses fall short of last year's show. We were much pleased with the excellent appearance of the sheep, especially a pen of sheep belonging to Mr. Newton, they were particularly fine, and were much admired.

CAISTOR WHITSUN FAIR.—There was a very indifferent show of sheep upon the hill, and business was exceedingly languid in the morning, but ultimately sales were effected at an average of 3*s.* a head lower prices than were fetched at the previous fortnight market. Useful ponies and strong horses were in request and sold at good prices.

At **HEREFORD FAIR** fat cows sold readily at 6½*d.* and a very few prime at 7*d.* per lb.; store bullocks were in much request and fetched the prices given at recent fairs. There were a great many sheep for sale, and those out of the wool were disposed of at from 6½*d.* to 7*d.* per lb.; pigs were rather on the decline, and averaged about 7*s.* per stone of 14*lbs.*

DUN'S MUIR TRYST.—There was a large show of cattle at this Tryst, and, notwithstanding the unfavourable state of the weather, much business was done. The north country dealers stood out for high prices at the commencement of the market, which the buyers could not consent to give; but ultimately the parties came to an understanding, and a great number of cattle exchanged owners by three o'clock in the afternoon. Fat cattle sold briskly at from 6*s.* to 6*s.* 6*d.* per imp. stone, sinking offals; and the best sorts of drove bullocks went off on much the same terms as at Slateford tryst, but inferior beasts were a shade cheaper; and a good number remained unsold.

YORK WHIT-MONDAY FAIR.—There was only a very thin supply of Fat Beasts, which met with ready sale at good prices. There was a good supply of Lean Beasts, and a proportionate number of buyers, who offered good prices. In other stock there seemed to be a brisk demand. In the Horse Fair there was a fair supply, there were many purchasers, especially for good horses, which fetched high prices.

YORK FORTNIGHT FAIR.—We had the thinnest supply of fat beasts we have had for several years, and the customers being rather numerous, many remained unsupplied: those sold making 8*s.* per stone. Of lean beasts there was only a thin supply, and a fair business doing. There was a good supply of fat sheep, which were sold up, making for clipped 6½*d.*, in the wool 7½*d.* There were a few lambs showing, which met with a ready market.

HAY FAIR.—There was a brisk demand for all kinds of cattle, but the supply was rather small. Fat cows sold from 6½*d.* to 7*d.*, and stores also sold well. Good horses went off at high prices, and were much sought after. There was also a general demand for sheep, but the show was limited.

RUTHERGLEN BELTANE FAIR.—The first large horse market of the season was well attended by both buyers and sellers. The show of horses was excellent, and the number larger than we have seen for several years. Business commenced early, and by three o'clock the best stock in the market had been sold or bargained for at remunerating prices. The principal lots of draught horses went off at 40*l.* to 45*l.* each. A number were sold in pairs at 70*l.* to 75*l.* Horses of ordinary quality sold at 25*l.* to 35*l.*, and inferior down to 15*l.* There were a number of light harness and saddle horses shown, but they did not appear to be in good request. The stock of cows was large. Some excellent milchers and tidy cows sold so high as 16*l.* to 18*l.*, others 12*l.* to 14*l.*, and down to 9*l.* There were few fat beasts in the market. Mr. Dunlop, of Stewarton, had upwards of fifty milchers, besides a number of farrow cows, forward, and at two o'clock he had sold thirty.

WHITSUNBANK FAIR.—There was a good show of cattle and sheep. Fat beasts met with a quick sale at from 7*s.* 6*d.* to 8*s.* per stone. There was a short supply of grazing cattle, which, notwithstanding the backward state of the pastures, were soon disposed of. Year olds brought from 5*l.* to 8*l.*; and two year olds, in good condition, from 9*l.* to 11*l.* The supply of cows was limited; and, the demand being good, fair prices were obtained. Good milch cows brought from 12*l.* to 15*l.*, and some were even as high as 17*l.* and 18*l.* Bred hogs were much in request, and sold from 35*s.* to 40*s.* each. The number of horses presented for sale, though considerable, were mostly of an inferior quality, but such as were good soon found purchasers at high prices.

BEDALE WHITSUNTIDE FAIR.—We have had a large show of all descriptions of stock, buyers numerous for all descriptions; beef was readily sold at good prices; in the sheep market the quality was good, but stood long, but nearly all sold up.—Beef, 7*s.* 6*d.* to 8*s.* per stone; Mutton, clipped, 6½*d.*; unclipped, 7½*d.* per lb.

BAKEWELL FAIR.—There was the usual supply of horned cattle. New and incalvers near at hand were inquired after, and sold readily at very high prices. Other descriptions of stock was dull of sale, although offered upon lower terms.—There were a few dairies of latter make cheese, and but few purchasers. Prices from 56*s.* to 62*s.* per cwt.

DRIFFIELD WHITMONDAY FAIR.—The show of beasts and sheep was rather greater than usual, and readily taken off at higher prices than usual. The show of horses, as usual, of every description but first rate ones.

BARNARD CASTLE.—Wool fairs, toll free, are about to be established at Barnard Castle, to be held in the months of July and August, in each year. The Duke of Cleveland, who is Lord of the Manor, has, with his usual liberality, in order to encourage the fairs, consented to forego any claim which he might have to toll. The town is well situated for the purpose of a wool fair, and it is hoped that it will prove of advantage to the farmers in the surrounding district, and the manufacturers of the town.

APPLEBY WHITSUN FAIR.—There was not a very large show of cattle, but stock was in good demand, high prices were asked for calving cows, and those already calved were as eagerly bought up; good prices were also given for geld cattle in fair condition. There was no prime fat cattle in the market; lean stock were at a discount.

AT ILSLEY SHEEP FAIR, although the supply was not so large as at the last fair, a considerable deal of business was transacted at higher prices; the promising appearance of abundant feed produced a lively demand for stock, and occasioned a rapid sale.

MALTON WHITSUN HORSE SHOW.—There was an uncommon bad show of very inferior horses,

being principally roadsters exhibited. There was a good attendance of buyers, and prices would have been very liberal had there been any thing of value or worthy of notice in the market.

SHEEP-BUYERS FROM RUSSIA.—We are requested to state that General Divoff, Chamberlain to the Grand Duke Michael of Russia, is now on an agricultural tour through England, making purchases of stock in his journey of the most celebrated flock masters in Sussex, Norfolk, Cambridge, and Bedfordshire. He visited this county last week, mainly to inspect some flocks of New Leicestershire sheep. He was introduced here by the Russian Consul-General, to Mr. Richard Garratt, of Great Harrowden, who conducted him to Earl Spencer's farm at Brampton, where he expressed high admiration of the very excellent husbandry. It is confidently reported that this tour, which is hastily carried on, is more to pave the way for the grandees who are coming here to witness our grand agricultural meetings, and at the same time to visit those gentlemen agriculturists, and their farms, whose energy and zeal for the improvement of agriculture has been so successfully crowned, as to draw forth the admiration of the whole world, that even Kings intend coming to see! General Divoff is an agriculturist, and takes great delight in improving his farm, which is a short distance from Moscow.—*Northampton Herald*.

VALUABLE BULL.—We understand that Earl Spencer's bull, Warlock, at Wiseton, near Retford, two years old, has just been purchased by a gentleman for the sum of 200 guineas, for the purpose of being sent out to Australia.—*Leeds Mercury*.

GARDENING OPERATIONS FOR JUNE.

Considerable care and attention must still be bestowed upon melons and cucumbers in frames, the latter will now require liberal supplies of water, which should be frequently administered with a coarse rose watering pot, both to refresh the foliage and to wash off the dust from their leaves. Successional crops of melons should have water frequently, but not in large quantities at a time. When the plants show any disposition to flag they must be shaded from the mid-day sun, but care must be taken to remove the shading early, so that they may be gradually accustomed to sunshine until they are enabled to endure it without injury. Unless the weather be very cold it will not be necessary to pay so much attention to the linings as hitherto. Air must be given freely every fine day, and the covering with mats continued until towards the end of the month. Ridge cucumbers which were last month planted out under hand-glasses may now be allowed to extend their shoots by propping up the glasses. Let the vines be regularly pegged down as they advance, and supply them plentifully with water in dry weather, the covering at nights with mats must still be attended to. A few more seeds may now be sown for a late crop.

Let succession pine plants have abundance of air and water, and shift such as require larger pots. Fruiting plants must be liberally supplied with water while the fruit continues to swell, but as it approaches towards perfection the quantity of water should be gradually reduced, and air admitted freely which will considerably enhance the flavour of the fruit. As the fruit is cut the plants may remain in the bed during the month to encourage the growth of the suckers, which after being removed from the parent plant should be laid up for some days to harden before planting.

The application of the syringe in the vineyard must be discontinued as soon as the fruit begins to colour, water should also be withheld from the borders, and

as much air admitted as possible. A few of the leaves should also be removed to expose the grapes to the light and sun which will very much improve them both in colour and flavour. In damp weather the fruit must be frequently examined, and all damp or decayed berries instantly removed. Towards the end of the month the fires may be discontinued, but if the weather be cold and wet it will be necessary occasionally to make slight fires to dry up the damp.

In the peach-house the waterings and syringings must be gradually discontinued as the fruit approaches to maturity, and as much air as possible admitted every dry day by throwing open the doors and sashes. A few of the leaves overshadowing the fruit should be cut off or pushed aside to expose it to the full influence of the sun, in displacing the leaves care should be taken to leave the foot stalk with a small portion of the leaf attached.

Green-house plants may now be turned out if not already done, and their places supplied with tender annuals and the hardier sorts of stove plants, air and water must be given as the state of the weather may determine. The plants out of doors will require liberal supplies of water in dry weather and should be frequently syringed over head to refresh and clear the foliage of dust. Continue to propagate by all the usual methods as directed in a previous paper.

Attend to the shifting and training of stove plants, destroy all kinds of insects as soon as they appear, for if allowed to establish themselves at this season, they will multiply incredibly in a very short time.

The pruning, training, and regulating espaliers and wall fruit trees should now be attended to, and the engine kept in daily operation to dislodge the insects and wash off the dust. Newly planted trees of all kinds should be mulched and liberally supplied with water at their roots, and syringed over-head in dry weather.

Polyanthuses, auriculas, and all the primula family in pots should be kept in a cool shady situation during the summer months. Alpine plants in pots and on rock-work must be attended to with water in dry weather, and worms and slugs carefully looked after.

Dablias, half-hardy perennials, biennials, and annuals of all kinds should now be planted into the beds and borders where they are to flower. In dry weather take up bulbs which have done flowering, dry them in the shade, clean and lay them up in a dry airy place until the planting season arrives.

Let the flower stalks of pinks and carnations be tied up as they extend, and about the end of the month propagate such sorts as you wish to increase by piping or laying. Attend to general neatness in every department of the flower garden, the beds should be frequently stirred with the hoe, and raked, all dead stems and branches removed, edgings cut, and grass and gravel kept in the highest order.

A few mazagan beans may now be sown for a late crop, sow peas for successional crops at the beginning, middle, and end of the month, let the drills be well watered before sowing, and if the weather be dry let them have abundant supplies of water two or three times a week. Sow cabbages, brocolies, lettuces, Endive turnips, scarlet runners and dwarf kidney beans, also radishes and small salads every ten or twelve days.

Transplant cauliflowers, cabbages, savoys, Brussels sprouts, leeks, celery and lettuce. Tomatoes on a wall or wooden fence and capsicums on a warm south border, water liberally in dry weather.

Hoe and thin out all advancing crops, stick peas, support with stakes, destroy grubs, slugs, insects and other vermin.—J. T.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF MAY.

In consequence of the almost continued inclemency of the weather during the last month, the winter wheats, though undoubtedly strong at the roots, have latterly, in some instances, assumed a faded and unhealthy appearance, the blades not coming away from the roots so kindly, nor with that natural appearance of strength which more genial weather would have produced. On the 15th of May, if we may be permitted to record the fact, the Derby Stakes at Epsom were contested during a storm of hail and snow; and this very unusual state of the weather was at the same period nearly general from Zetland to Cornwall. As yet, the prospects of the farmer are not cheering, nor can his expectations at present extend beyond the hope of his labours being attended by much above an average crop. One inferior crop succeeding to another, as may possibly be the case this season, cannot be contemplated without creating a considerable degree of alarm, for it is not easy to discover channels from which any material deficiency in the coming crop can be well supplied. From the stock of old wheat of British growth little assistance can reasonably be expected, for unless the importation of foreign wheats be even much beyond our present expectations, and we are perfectly aware that it will be extensive, the quantity of British old wheat, which will remain in the empire generally when the new wheats are brought forward into the markets for consumption will be small indeed. Notwithstanding, therefore, the change for the better, which, during the last eight or ten days, and that being a rather slight weather improvement, has occurred here in the weather, no material reduction in the value of the necessaries of life can reasonably be expected during the remainder of this year.

If any proofs were necessary of the advantages of the corn-laws to all classes of society here, whether they be agricultural, manufacturing, or commercial, the present state of the corn-trade most certainly affords one amply sufficient for the conviction of all who can prevail on themselves to reflect with coolness on the existing circumstances of the British Empire. The experience of the last twelve months most abundantly demonstrates that, even at the trifling duty of 1s. per qr., the deficiency in our wheat crop, which was occasioned last year by the inclemency of the weather, cannot be supplied by the overplus growth of foreign nations, and furnishes indisputable grounds for the encouragement of agricultural pursuits at home, even should that encouragement occasionally be attended by some minor sacrifices on the part of the public in general. The protection which the corn-laws have extended to that most important department of British industry has been the means, during the last quarter of a century, of causing a most extensive improvement in the cultivation of our fields. The same quantity of land now under crop produces at least one-third more, either in weight or in measure, than the same lands did twenty-five years ago; and, under the same auspices, lands, formerly almost in a state of nature, are now covered with different articles necessary to mankind. The value of these laws therefore,

during the corn season, has been most abundantly rendered manifest, for these agricultural improvements chiefly have saved the country for a time from all the calamities of actual famine. Although, however, the benefits already derived from these laws have been signally advantageous to all classes of the community, still a great deal more remains to be done before they reach that degree of perfection of which their proper workings are capable; but this farther advance in agricultural science can only be accomplished by extending adequate protection to those who embark their property and devote their talents and time to objects of such vast national importance. To insure to the producers at home of the various articles originating in agricultural industry, at all events, a preference in our home markets of consumption over those of foreign production is necessary, and certainly is not more than just, to the general interests of the British community, for as agriculture increases in the United Kingdom productive labour must increase in proportion, and the wages of labour must eventually be placed on a level with all the necessities and many of the luxuries of life. For instance, in Ireland, agriculture may be represented as only in a state of infancy. In that portion of the Empire there is at present a most redundant population, and many thousands of families are in a state of great distress, occasioned by the want of productive employment in their own country. Still in that country, ample means exist for employing at least twice as many inhabitants as it now possesses, but this benefit can only be obtained by protecting the capital and encouraging the enterprise of those connected with Irish agriculture. The best, indeed we may add the only, protection, which can be given for these most advantageous purposes is that which the corn laws extend to the agricultural pursuits in these kingdoms. To repeal these laws would most effectually destroy all the prospects of any farther improvement occurring in the tillage of the fields, and would likewise be soon followed by commercial and manufacturing distress to which no remedy could be applied afterwards. The fallacy of the modern doctrine of exchanging our manufactured goods for foreign grain has been most amply made apparent by the events which have occurred during the last twelve months. Foreign grain worth at least six millions sterling, has been imported during that period, but we do not find that our exportation of manufactures to those countries from whence this corn has been received, has been increased in a proportionable degree. On the contrary, complaints are already universally made of the flatness which at present exists in our export trade to Europe, and the unfavourable state of the Foreign Exchanges clearly proves that our imports continue to exceed in value our exports. So far, therefore, from the Continent, taking our manufactures in exchange for foreign grain, we are, at the present moment actually sending out of the country the precious metals to the extent of many millions sterling in payment for foreign grain now in consumption throughout the United Kingdom. It

must be obvious to all, who are without prejudice, that a system of this description can only be of short duration. To pay largely in money annually for foreign grain would eventually, and that very speedily too, reduce every class in this country to poverty. To hold steadily in view the best way for the regular supply of the people with the necessities and luxuries of life, is the duty of every patriotic Government, and the repeal of the corn laws certainly would be a most extraordinary way for accomplishing this most desirable object. For a few years no doubt, the result would be a heavy depression in the prices of the necessities of life, and the master manufacturers would increase for a short time their own wealth by the reduction in wages, which cheap provisions would enable them to make. This however, would soon find its limit, for the reduction in this way would cause a corresponding reduction in the consumption of manufactured goods. From a reduction in the value of provisions, occasioned by means of this description, the great body of the people would not reap one solitary benefit. On the contrary, the productive classes of society would not only find the wages of their labour reduced in proportion, but also would be soon deprived of a considerable portion of that labour itself. The ruin in many cases and the depression in all classes, which the repeal would occasion in agriculture, would throw many thousands of families, now subsisting on the cultivation of the soil, entirely out of employment, and the manufacturers themselves would soon afterwards be deprived of certainly the most valuable and extensive market for the consumption of their goods, which they can by any possibility possess. If our home crop of wheat last year had been an average one, and sufficient for the consumption of the people even at the present prices, the five or six millions sterling, which have been paid away to foreigners for wheat, and no part of which has as yet returned, or is likely to return to this country, would now have been widely circulated amongst all classes, and would, like seed planted in a kindly soil, have produced an abundant quantity of productive labour amongst the people generally. The evils which the elements effected last year, the repeal of the corn laws would most effectively perpetuate for years to come, whilst by moderately protecting the interests of agriculture at home, similar misfortunes can only be of rare occurrence; the Empire in most seasons being fully equal to produce all the grain requisite for the general consumption. If the condition of the people generally is to be improved, that improvement can be effected by no better means than by giving reasonable protection to the labour of the industrious classes at home. The progress made in agricultural improvement has already been most extensive, but it has not yet nearly arrived at that degree of perfection of which it is capable. The produce of the fields by superior cultivation, may still be doubled, and the time is perhaps not far distant, when we may export to our own Colonies and to independent states in more Southern climates, the surplus of our crops. When agriculture, by these and other means prospers, the manufacturers also must become prosperous, but they never can flourish on the ruin of agriculture. This has been perfectly established by sad experience from the year 1822 to that of 1830. Provisions then by the alteration in the value of the circulating medium, declined far under their intrinsic worth, and commerce ought then to have prospered, if low priced

provisions could have produced this most desirable consequence, but with the depression of agriculture, every department of industry became depressed in a more than equal degree; nor could any remedy be applied to this unfortunate state of the Empire, until by a revision of the corn laws in 1827, the agricultural interest was again restored to a healthy and sound state, and then, and not till then, did commerce re-assume her wonted activity. Society here, is at present, so beautifully constituted, that all classes are depending on each other. Of the arch of this society, agriculture is the keystone, and this interest cannot be injured, without injuring in an equal degree the entire fabric. It ought therefore to be protected in every possible manner, by moderate taxation, as well as by a preference in our home markets being extended to the produce of the fields.

During the month of May our large markets have in general been well supplied with all descriptions of grain, the wheat generally being of foreign growth, and the oats of Irish importation. The barley crop in England having been fully an average one, both in quantity and quality, the supply of this article from the barley districts has been rather an abundant one for the time of the year. The supplies generally, however, of all articles have not been more than equal to the demand, indeed not so in the article of wheat, to the value of which a few shillings must be added since the end of April, consequently the weekly averages of this article are advancing, and it is hardly possible to suppose under the present rather unfavourable appearance of the growing wheat, in conjunction with the lateness of the season, that this advance must not proceed. Of foreign wheat throughout the United Kingdom not more than one million of quarters remain at present unconsumed, of which about 500,000 quarters have been charged already with the duty, and the remainder has been placed under her Majesty's lock. Another million of quarters will exceed the quantity of wheat which may be expected to arrive here from all foreign parts previous to the next harvest. Unless the quantity of British wheat now remaining in the possession of the British farmers therefore, be far larger than appearances of late, and present circumstances permit us to suppose it to be, this supply will be very inadequate to the regular consumption. The lateness of the season has prevented that reduction in the consumption of bread, which the supply of vegetables at this time of the year commonly has occasioned, and there is little prospect now of the possibility of any remedy being immediately applied to this evil. It may be said that a sudden change in the weather may yet restore to health all the injured plants. This no doubt may in some instances yet be the case, but where the damages have been extensive, as they have been in the garden grounds, we should as soon fancy that to hold a frost-bitten finger to the fire would work out its cure, as to suppose that heat can restore strength to plants of which the vital principle has been injured by the elements. In the absence therefore, of the usual substitutes for bread at this season of the year, the consumption of wheat must, for some time at all events, be larger than it would have been under more favourable circumstances, and an improvement in prices, even should the weather become favourable to the crops during the remainder of the season, is much more probable than the reverse. The holders of foreign wheat therefore, display not much anxiety respecting the future value of their property, nor do they feel much in-

clination to force sales at the present quotations. Had the modern doctrine of a barter of manufactures for foreign wheat been correct, no doubt the export trade might have been increased, but that must have been done at the sole expense of the British agricultural interest, and eventually the manufacturers would have lost in the home market double the increase which they would have gained in those foreign countries from which the grain was imported. As matters are, however, the chief part of the late importation has been paid for in specie, and for our future supplies, should the state of the weather render a farther importation from abroad necessary, a further exportation of the precious metals will become absolutely necessary, and may eventually convulse the empire by another money panic. In London the farmers have contributed very slightly since the turn of the year to the wheat supply, but still the foreign importation of this article has been so bountiful, that the prices in the Corn Exchange in Mark Lane have been generally lower than in many of the country markets. This state of the trade has caused no inconsiderable demand from the inland and manufacturing districts, and has prevented any extensive accumulation of foreign wheat, duty paid, in the granaries on the Thames, the chief quantity now in the warehouse being under bond in expectation of a reduction soon occurring in the duties payable on their entries for home consumption. It is extremely difficult to find any plausible reason for the very scanty supplies sent by our farmers into the markets generally for sale, for prices have certainly been dear enough to have induced them to thrash out much larger quantities than they have done since the gathering of the last harvest. It may, we fear, with much truth be assumed, that in consequence of the badness of the last crop, they have very little now remaining in their possession, and that that little is only in the hands of the wealthy who can afford to hold it over until the end of the present season. Upon the whole the prospects of the wheat trade at present throughout England are not very cheering, and they must become gloomy in the extreme should some favourable change not soon occur in the weather.

The last crop of barley was fully an average one, and the quality of it was superior to that of common years. During the malting season it obtained high prices, and the demand for its consumption in various ways was extensive. For malting purposes one-third more than is at present used would be rendered necessary by an alteration in the malt and English spirit duties. The reduction of the malt duty of 20s. per qr. to one of 13s. 4d. per qr. would be a general benefit to the community at large. It would extend the consumption of barley for brewing purposes, from six millions of quarters to nine millions of quarters. The landed gentlemen and their tenants would thus gain all the advantages which are to be obtained from an extra growth of three millions of quarters of barley, and the agricultural labourers would find additional employment from its production. The consumers of beer at present would supply their wants at much cheaper rates, and thousands of families would then participate in this almost necessary article of consumption, whose wages do not now permit the payment of its present excessive prices. The revenue would likewise be improved by the reduction, and it would annually thus add to the real wealth of the empire. Since the malt duty was reduced from 34s. 10d. per quarter to 20s. its consumption has been more than

doubled, and a still farther reduction would probably be attended by still greater advantages. To promote the prosperity of agriculture, to increase the revenue, and also to improve public morality, the duty on spirits manufactured in England should be placed on a level with those paid in Scotland and Ireland. In these two kingdoms the duties are now moderate in the extreme, and the very natural consequence has been the almost entire suppression of that highly injurious trade, that practice of violating the law, which is the foundation of many crimes—*smuggling*. No sooner were these duties reduced in those portions of the Empire than the quantity of duty paid spirits sent into general consumption, was more than tripled, and smuggling, which then produced a much greater quantity of ardent spirits amongst the people than is now manufactured by the licensed distillers, was entirely suppressed. By the reduction of duty the revenue collected there was doubled, the consumption of spirits generally was very much reduced, and most certainly public morality has been in no inconsiderable degree improved. In England the duty was only reduced from 10s. 6d. to 7s. per gallon, but even at this small remission the revenue was also considerably increased. Still, however, this rate of duty is far too high, and the smuggler's trade is consequently most flourishing. It is almost impossible to conceive the extent to which it is now carried on. It surely is highly desirable that this trade should be immediately put down, and the only effectual mode of accomplishing this object is by reducing the public charge on the English distiller. This alone can render the smuggling trade so little advantageous, that no profits, which could be derived from it, would in any way be equal to the losses, nor remunerate the punishments which would arise from its detection. Certainly the Temperance Society never can produce this effect. At the last meeting held in London of this society, on the 21st of May last, the Chairman, the Bishop of London, in his address to the members, complained of the great increase in the use of ardent spirits which had taken place amongst the people. He said that the quantity used in 1820 was only 12,894,895 gallons, and that the duty in the same year was 1,789,000*l.*, whilst in 1830 the quantity used had increased to 27,000,000 gallons, and the duty to 3,444,390*l.* The right reverend prelate attributed this increase in the consumption of spirits to the increase of immorality amongst the people, an inference which certainly is not well founded. It was betwixt the years 1820 and 1830 that the spirit duty was made moderate in Ireland and Scotland, and was reduced in a small degree in England. The increase in the quantity of duty paid spirits has since then occasioned a more than corresponding decrease in the quantity of smuggled spirits consumed throughout the United Kingdom. Excess in anything always does injury to the object proposed, and excess in the British spirit duties, whether it be intended for the purposes of revenue, or for the promotion of public virtue, has produced, and must continue to produce, consequences the reverse, until these duties be reduced to moderation in England, as has been the case, a few years ago, in Scotland and in Ireland. Another advantage, and that no small one in a national point of view, would arise from this alteration. British grain alone would then be used in the distillation of spirits instead of foreign grain, and thus the expense of their production would be circulated amongst the inhabitants of the United Kingdom.

In 1838, the collection of duty from the distillers throughout the United Kingdom, amounted to nearly twelve millions sterling, and the trade of the

smuggler during the same period, deprived the revenue of fully four millions sterling, besides this Exchequer robbery causing likewise an annual increase of immorality amongst the lower orders of society. The legislature has it now in its power to encourage the cultivators and the proprietors of barley lands, by opening to them an additional consumption for barley to the value of three or four millions sterling annually. It can at the same time, render the revenue of malt and British spirits not only larger, but likewise more easy of collection, and less burthensome to the community than it is at present, and the most important benefit of all, would be that improvement in public morals, which an alteration in the present British spirit system would most inevitably be the means of eventually creating, for people generally will have articles, which the law, by heavy duties, prohibits, whilst what can be easily obtained, they have not the same strong inclination to possess themselves of. In short, by a reduction on the duty now charged on the manufacture of British spirits, the consumption of foreign spirits illicitly imported, would speedily be no longer the fashion amongst those classes, who at present injure their healths, and destroy their mental faculties by an inordinate use of them. Although the barley trade has been sound and productive to all interests in the state during the last twelve months, still this forms no valid reason why obvious improvements should not be made in it, more particularly when it is quite apparent that these changes would be attended by general benefit to all.

Since the close of the last year, all the large markets of consumption have been plentifully supplied with oats, chiefly of Irish production, and their prices have been rendered much more moderate than those of any other description of grain. This is one of the many advantages which the inhabitants of the United Kingdom derive from the progress which agricultural improvement is annually making in the Sister Island. This demonstrates, in a manner which cannot be misunderstood, the wisdom of protecting native industry by all means, which are not inconsistent with the public good. The money, amounting to several millions sterling, which has been paid for these oats, has not been remitted to foreign countries, as has been the case in payment for the foreign wheats imported during the same period, but it has been paid to the home producers of oats, who have already placed the greater portion of it again into general circulation. From the failure of this crop last autumn in the north of England, and more particularly in Scotland, the importation of it from abroad must have been as expensive as it would have been ruinous to the country generally, had the deficiency, as yet at all events, not have been abundantly made good by the surplus growth of Ireland. In that kingdom, the field for agricultural improvement is nearly boundless, and it will be cultivated so long as remunerating prices can be obtained for the surplus of the annual crops. As agricultural prosperity goes forward there, it must eventually lead to an extensive introduction of commerce and manufactures amongst the people, affording to the industrious portion of them productive employment in abundance. We have already mentioned that by the assistance of the Irish farmers the prices of oats have been rendered more moderate than they could by any possibility have been, had we depended solely on foreign arrivals, but these exertions have to a certain degree exhausted the growth of this article last year in that part of the empire, which suffered also considerable injury last season from the unpropitious state of the weather, and it is not probable that the

shipments to Great Britain can be continued equal to our wants until the growing crop be brought forward into the market for consumption. Already oatmeal is shipping from various places to Ireland, where oats are now dearer than they are in Mark Lane. This state of the oat trade must therefore either cause prices to advance here, or draw supplies of them from quarters from which little is at present expected. As it is we have already reaped considerable advantages from the preference which Irish oats have received over those of foreign growth, and the same system is causing a rapid improvement in the cultivation of wheat, the breadth planted with which is annually increasing. The time is not far distant when Ireland may supply any deficiency which the elements may hereafter occasion in the wheat crops in this country, in the same abundant manner in which she has this season made good the deficiency existing up to this date in the oat crop. The extent of wheat sown last winter is larger than it has previously been, but the weather has been wet, cold, and ungenial, and universal complaints are at present made of the sickly appearance of the young plants. As wheat, however, is hardy, and can endure much unfavourable weather, a change in the weather for the better may still be of the highest benefit to the Irish growers of it, though this change may come at a period too late in the season, entirely to restore this crop to luxuriance, or even to place it in the state of one of an average growth. In Ireland the corn laws are very necessary, for in conjunction with the gradual introduction of the English poor laws, field labour must continue to extend itself, and the country to reap all the advantages which can result from a productively employed population in the cultivation of all things necessary to mankind.

It is too early as yet to form any opinion of the probable produce of the wheat crops abroad when the harvest time arrives. In France appearances at the present time are not favourable. The weather has hitherto been fully as inclement as it has been in the United Kingdom, and the prospects there are certainly not more cheering than they are here at the present time. The climate however is different from ours, and the result of the harvest may yet be as favourable as the most sanguine could desire it to be. Similar observations must be applied to appearances in the Peninsula and in Italy. Little wheat now remains in any of these Kingdoms fit for forwarding to this market. In the Arches and the Ports in the Levant some good wheats still remain, but the prices are rather too dear to admit their importation here at the present rates of duty. At Odessa also and several other places in the Black Sea, a considerable quantity of wheat still remains, and it may be forwarded here should our prices encourage the merchants to ship it, but the voyage is always tedious and frequently too long for a wheat cargo. In Poland the weather has also been heretofore unfavourable, but the wheats are not as yet far enough forward to admit the formation of any opinion respecting their probable produce when the time arrives for reaping them. In all the ports of shipment throughout the Baltic the stocks of wheat never were more reduced than they were at the latest advices, but when the navigation of the Vistula and of the other rivers falling into that sea becomes again open, the quantity no doubt must be considerably increased, though not abundantly so until the growing crops be gathered. Prices do not encourage any immediate shipments to our markets, for the loss would be fully equal to the rates of duty payable at present here. At Hamburg and all the northern ports without the Baltic the quantity forwarded to this country since the turn of

this year, has been so considerable, that very little of that quality which is suited to our markets, now remains in any of them, and all the ports of Belgium and Holland exhibit a state of equal exhaustion. High prices no doubt find corn where it is not expected, but at its present value in this country, we again repeat that another deficiency in our wheat crop equal to the one of last year, will with great difficulty be supplied, and most certainly little prospect exists of a quantity equally large as that imported during the last twelve months being found on the continent for our consumption, even at much higher prices than are our present quotations.

CURRENCY PER IMPERIAL MEASURE. MAY 27.

	Per Qr.	Per Qr.
WHEAT, Essex & Kent . . . red . . . 64	66 70	white . . . 70 74 78
Suffolk & Norfolk	64 70	do. 70 72 74
Irish	58 60	do. 62 66
Old, red	68 72	do. 76 78
RYE	40 42	new 44 46
BARLEY, Grinding 31 36 Malting	40 44	Chevalier 44 45
Irish	32 34	Bere 30
MALT, Suffolk & Norfolk	64 66	Brown . . . 60 62
Kingston & Ware	66 68	Chevalier 68 70
OATS, Yorkshire & Lincolnsh, feed	27 28	Potatoe . . 29 30
Yonghall & Cork black	25 26	Cork, white 26 27
Dublin	24 25	Westport 26 28
Clonmel	27 28	Limerick 28 30
Londonderry	26 27	Sligo . . . 25 26
Newry	28 30	
Galway	22 24	
Waterford, white	22 24	Black . . . 24 25
Scotch Feed	27 29	Potatoe 29 30
BEANS, Tick	37 38	Small 40 42 44
PEAS, Grey	34 36	maple . . . 34 38
White	35 42	boilers . . 42 44
SEED, Rape	32 36	Irish 25/ per last
English Red Clover, fine . . . 64	70 80	96s per cwt
White	66 70	80 90s
Mustard, White, 12s 14s . . . brown	21s 22s	per bush
Tares	32 36	old 30 34 . . new 60 —s per qr.
FLOUR, Town-made	60	Suffolk . . 50 52 per sk of
Stockton & Norfolk 50	52	Irish fines 52 53 280 lb.
		Superfine . 54 56

Foreign Grain and Flour in Bond.

WHEAT, Dantzic	60	70
Hamburg	60	68
BARLEY	30	32
OATS	20	— feed 15 to 16
BEANS	30	—
PEAS	24	27
FLOUR, American	per brl.	40 42

Account shewing the Quantities of Grain, Meal and Flour, imported into the United Kingdom, during the month ending the 5th May, 1839; the Quantities on which Duties have been paid for Home Consumption during the same month, and the Quantities remaining in Warehouse at the close thereof.

Foreign Grain and Flour.	Quantity imported.	Quantity entered for consumption	Quantity remaining in warehouse.
	qrs. bush.	qrs. bush.	qrs. bush.
Wheat from British Possessions			173 4
Ditto Foreign	213702 7	177309 0	41054 1
Barley, do	29599 0	20167 3	9325 4
Oats, do	10707 1	174 2	245749 2
Rye, do	6215 5	924 6	3053 4
Peas, do	3757 4	1412 4	6371 2
Beans, do	3323 0	417 2	11936 7
Indian Corn, do	3 3		159 4
Buckwheat, do			
Flour from British Possessions	cwts. qrs. lbs.	cwts. qrs. lbs.	cwts. qrs. lbs.
Ditto Foreign	1500 0 0	1500 0 0	4598 1 26
	54419 1 7	36589 0 24	23206 3 17

STOCK OF GRAIN IN BOND IN LONDON ON THE 5th MAY.

Wheat.	Barley.	Oats.	Peas.	Rye.	Flour.
qrs.	qrs.	qrs.	qrs.	qrs.	cwts.
25,360	5,568	67,139	1,388	4,341	304
Cloverseed, 16,450 cwts.					

IMPERIAL AVERAGES.

Week ending	Wheat.	Barley	Oats	Rye	Beans	Peas.
April 12th	63 3	38 2	24 6 40	9 37 2	37 7	
19th	71 0	39 2	24 10 39	7 37 11	38 1	
26th	72 7	40 1	25 2 39	7 38 9	38 9	
May 3rd	71 0	40 6	24 11 40	6 38 0	39 1	
10th	70 6	39 8	24 11 41	5 38 8	38 5	
17th	71 2	39 1	25 8 41	5 39 0	38 1	
Aggregate Average of the six weeks which regulates the duty	70 9	39 5	25 0 40	7 38 3	38 4	
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the Mail of that day from London	10 8	3 4	9 3	9 6 12	6 12 6	
Do. on grain from British possessions out of Europe	0 6	0 6	0 6	3 0 3	0 3 0	

Foreign Flour, 6s. 5d. per 196lbs. British Possessions, do. 3gd. per 196lbs.

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES from the by the Imp. Quarter, corresponding Gazette, of from the Gazette, of in the last year, Friday Friday last, May 24, May 25, 1838.

	s. d.	s. d.
WHEAT	71 2	WHEAT 62 4
BARLEY	39 1	BARLEY 31 2
OATS	25 8	OATS 22 8
RYE	41 5	RYE 32 9
BEANS	39 0	BEANS 37 0
PEAS	38 1	PEAS 34 5

SEED MARKET.

MAY 27.

During the past week a little speculative enquiry has been experienced for white Cloverseed, and a few small parcels have changed hands at about our quotations; this morning there is nothing doing in the article. For other descriptions of Seeds there is only a retail demand, and we have no alteration to notice from the currency of Monday last.

CLOVER English, red . . . 43 66 85	white 48 62 per cwt.	nominal.
Dutch	— —	
German	46 75	
French	— —	
American	— —	
Trefoil	12 25	
Rapeseed, English	£34 £36 foreign £23 £30 per last.	
Linseed, English sowing	— —	per qr
Baltic	— —	crushing 42 43
Mediterr. & Odessa	— —	43 44
Hempseed, small	34 36	large 43 42
Coriander, new	18 20	fine 20 21 per cwt.
Mustard, brown	15 17	white 10 13 per bushel.
new	— —	8 12
Turnip Seed, new Swedes	22 25	other sts. 28 36
Rye Grass, English	30 42	Scotch 18 40
Tares, Spring	6s 0d to 6s 6d	
Canary, new	73 76	
Caraway	— —	49 51 extra 52
Linseed Cakes, foreign	87. to 87. 5s. per ton.	
Rapeseed do.	57. 10s. to 67.	

PRICES OF HOPS.

BOROUGH, MAY 27.

The trade in Hops of all descriptions, both new and old, has improved as far as demand goes—prices firm—without much advance at present. The district reports are decidedly worse during the week, occasioned principally by the frosty nights. The estimated duty is

nominally quoted at 150m. without anything doing upon it.

PRESENT PRICES.

	£	s.	d.	£	s.	d.	
Kent Pockets, 1538	4	4	0	to	4	18	0
Ditto choice, do.	5	12	0	—	8	8	0
East Kent pockets, do.....	4	15	0	—	9	0	0
Sussex do do.....	3	15	0	—	4	0	0
Kent bags do.....	4	10	0	—	6	0	0
East Kent do. do.....	4	10	0	—	8	0	0
1837's	3	8	0	—	3	15	0
1836's	2	0	0	—	2	16	0

POTATO MARKET.

SOUTHWARK WATER-SIDE, MAY 27.

The supply of Potatoes to the Port of London during the past week, though liberal for the present advanced state of the season, has not been more than adequate to the demand. Owing to the prevalence of unusually cold weather and North East winds, which has tended greatly to increase the consumption, and proved highly favourable to Salesmen in clearing the market of what remained from previous arrivals, as well as considerable quantities stored in warehouses at the different Wharfs contiguous to the river. It is now pretty evident from information recently received from the northern districts, as well as from the Channel Islands, that future supplies for the remaining part of the season, is in very few hands. The demand for fresh samples is good, at considerably advanced prices, and those who have good qualities to export to the London market may now safely calculate on an excellent finish for the season. Annexed are the arrivals of last week:—Devonshire, 591 tons; Yorkshire, 415; Scotland, 376; Jersey and Guernsey, 225. The whole making a total of 1,607 tons.

PRESENT PRICES.

Per Ton.		Per Ton.
York Reds.....100s to 120s	Devons.	85s to 90s
Do. Kidneys.....—s. 100s	Jersey & Guernsey	
Scotch Red...75s .. 85s	Blue	70s .. 80s

WOOL MARKETS.

MAY 27.

BRITISH.

Perlb.	s.	d.	s.	d.
Down Teggs	1	8	to	1 8½
Half-bred Hogs	1	8	1	8½
Ewes and Wethers	1	4½	1	5½
Blanket Wool	0	8	1	1
Flannel do.	1	0½	1	4½
Skin Combing	1	2	1	4

YORK.—There has been a very small quantity of wool shown at this day's market. Few buyers were present, and the sale was rather dull. Prices, hog and ewe, 13½d. to 14½d. per lb.

WAKEFIELD.—Our staplers have at last been obliged to give way a little in price, and that in nearly all kinds of wool, and without being able to quit stock to any extent. In the wool growing districts, however, there is some demand at slightly depressed prices; but who will sell except at the rates lately current?

CHESTERFIELD, May 21.—We have very little to report on the state of the wool market in this district since our last. The trade still presents a dull inanimate appearance, the sales being quite of a limited character. We cannot, however, but state that the prices are a little depressed, which is supposed to be owing to the want of vivacity in the manufacturing markets. It is still conjectured that wools will not be much lower, as the growers are firm, and the probability is they are likely to continue so.

EXETER.—In this market things are dull, and Yolk Wool must be quoted at 10d. per lb. Washed Wools are, Knott Wool, 13d. to 14d.; Dorset Horn, 14d. to 15d.; and Marsh Wool, 15d. to 16d. per lb.

Sorts.—Shorts,—Coarse and Short Coarse, 8d.; Broad Head, 9d.; Red, and Pinions, 9½d. to 10d.; Kent Head, 10d.; Fine Head, 11d.; Green, 12d.; Matching, 12d. per lb. Stripes.—Cornish Stripe, 14d. to 14½d.; North Devon Stripe, 14½d. to 15d. per lb. Fell Wools.—In these Wools, with dulness in the market, a considerable reduction has been submitted to, nor can we quote Fine Long Fells higher than 13l. per pack, or 13d. per lb. Short fine Fells are 12d.; and Ordinary parcels of Skin Wool, 10d. to 11d. per lb. Tops 18d. to 18½d.; Combing Super, 20d. to 20½d. per lb.

DUBLIN, (Thursday last.)—Very few parcels of this year's clip have as yet appeared in market, the few sales made have been at our former quotation of 21s. to 22s. mixed parcels; 22s. to 23s. hogget per stone.

ANOTHER REPORT.—Some small packs of new wool have come in for sale since our last, which were disposed of at from 19s. 6d. to 20s.; but from the coldness of the weather no quantity can be expected in till a change takes place. In skins but little doing at 19s. 6d. to 20s. Prices nominal for fleece.

LIVERPOOL.

SCOTCH, May 25.—The same dulness continues in our market for all kinds of Scotch wool, in which we have not heard of a single transaction this week; our quotations must therefore be considered nominal, for to effect sales in the present very depressed state of the market would be at a considerable reduction in prices.

Per Stone of 24lbs.		s.	d.	s.	d.
Laid Highland Wool, from	....	11	0	to 11	6
White do.	do. (scarce) ..	0	0	0	0
Laid Crossed do.	do.	12	0	13	0
Washed do.	do.	13	0	14	6
Laid Cheviot, do.	do.	15	0	16	6
Washed do.	do.	20	0	23	0
White do.	do.	30	0	31	0
Import for the week	.....			4	bags.
Previously this year	.....			2,913	do.

FOREIGN.—A very limited business was transacted in foreign wool during the week; several enquiries were made apparently, however, with the intention of learning if holders would submit to lower prices.—Import for the week, 502 bags, previously this year, 26,368 bags; total, 26,370 bags.

FOREIGN.

MAY 27.

With the exception of several extensive sales of inferior German wool which have been effected, during the past week, for export to France, the foreign wool trade is so extremely inanimate, that the currencies are almost nominal. Arrivals, 600 packages.

Wool on which the Home Consumption Duties have been paid at London, Liverpool, Bristol, and Hull, during the last week:—

WOOL.	This Year, previous to last week.	Same time in the last Year.
Spanish, London	708071	765093
Australian, do.	1091169	432275
Other Sorts, do.	5127302	4181977
Liverpool	3843666	3158843
Bristol	23300	4000
Hull	4428311	5250881

IMPORTS OF WOOL.—Quantity of wool entered at Hull for Home Consumption, during the week ending May 16.

From Hamburg	214,976 lbs.
From Dunkirk	5,711
From Aarborg	20,000
Total	240,687

